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ABSTRACT

This study assessed visitor participation in six interpretive activities provided by the National Park Service on the Blue Ridge Parkway. The study concluded that: (1) differing social characteristic variables tend to be associated with participants and nonparticipants: (2) differing social characteristics tend to be associated with participants in different activities: (3) weather conditions affect the characteristics of participants at given interpretive functions: (4) characteristics of participant groups vary according to place variables: and (5) participants and nonparticipants can be explained by 12 specific activity variables. (Author/RE)

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ASSESSING VISITOR PARTICIPATION/NONPARTICIPATION IN INTERPRETIVE ACTIVITIES THROUGH UNOBTRUSIVE MEASURES

A Thesis

Presented in Partial Fulfillment of the Requirements
for the Degree Master of Science

by

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The Ohio State Univeristy
1980

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ABSTRACT

ASSESSING VISITOR PARTICIPATION/NONPARTICIPATION IN INTERPRETIVE ACTIVITIES THROUGH UNOBTRUSIVE MEASURES

(June 1980)

Tamara Lynn Nelson, The Ohio State University

Interpretive activities, provided in a variety of settings, have educational, informational and recreational aspects. Interpretation, a communication process, depends upon the existence and participation of an audience. While most research in the field of interpretation has focused on evaluating the effectiveness of interpretive programs, few studies have attempted to identify certain empirical regularities regarding the visitor. Thus, a deficiency of information exists with respect to the visitor.

This study assessed visitor participation in six interpretive activities provided as a visitor service by the National Park Service on the Blue Ridge Parkway in North Carolina. Conducted in 1979, the study differentiated levels of participation in terms of five groups of variables -- social aggregate, social group, time/environment, place and associated activity.

Description and analysis of the data set was conducted, and the results are as follows:

1. Certain social aggregate variables do discriminate between participants and nonparticipants in specific interpretive activities.

2. Social group variables do distinguish participants from nonparticipants in certain interpretive activities.

3. Weather conditions do differentiate between participants in personal interpretive activities.

4. Certain place variables do discriminate between participants and nonparticipants for particular interpretive activities.

5. Participants and nonparticipants in interpretive activities can be explained on the basis of 12 associated activity variables.

ACKNOWLEDGEMENTS

Well, I finally made it. Four hectic but enjoyable years have quickly flown by, culminating into this sizable document. I truely had my doubts along the way as to ever completing the task I choose to accomplish. However, here it is, thanks to the support and concerted efforts from many outside sources.

First, I must commend and give my deepest gratitude to my two most favorite people -- my parents. Their encouragement, patience and confidence in me never faltered. Although, they had a difficult time grasping the scope of my task, they remained faithful in their support.

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CHAPTER I

INTRODUCTION

Interpretation is defined as "an educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information" (Tilden, 1977). This activity "... makes a particular subject matter 'come to life' by processing information to fit the relevancies of the human psyche" (Cherem, 1977a). "Put another way, interpretation is learning in a recreational setting" (Cherem, 1977b). Field and Wagar (1974) suggest that interpretation is "the successful transmission of information to clientele groups." "No matter how you define interpretation, it must include the visitor" (Hanna and Silvy, 1978).

All of the preceding statements are similar in that they all imply the importance of people to interpretation. Visitors to an interpretive site selectively choose to participate in the provided activities. As constituents of the interpretive audience, people play a key role in the ultimate success of the interpretive event. With a thorough understanding of the participant, in terms of characteristics, social groups, behaviors and attitudes, the interpreter is able to more effectively plan, program and evaluate interpretive services and facilities. However, in spite of the importance of information about the visitor, the field of interpretation currently lacks a foundation of empirical data regarding its audience and an explanation of that data (Mullins, 1979). With inadequate background knowledge, accomplishing effective interpretation is limited.

The citations of this and the following pages follow the style of the Journal of Interpretation.

The goal of this study is to gather information through unobtrusive observations of people to expand what interpreters presently know regarding the visitor. The purpose of the study is twofold: (1) to assess participation in interpretive activities and (2) to investigate the interrelationships between participation/nonparticipation and social aggregate, social group, time/environment, place and associated activity variables.

Problem Statement

Past studies concerning interrelationships between the visitor and participation in interpretive activities have been limited in quantity. A study by Mullins(1979) did assess participation in interpretive activities for three geographical regions of the United States. Mullins found that certain social group and place variables clearly differentiated participants from nonparticipants in interpretive activities.

In the regions investigated by Mullins (1979) which were National Park service specific, information of this nature has value for the planning and implementation of effective interpretation. Mullins' results have potential application to other interpretive areas. However, since his study was not designed to permit broad-scale generalizations of the findings to other populations, guarded generalizations were recommended. Additional research is necessary before further applications can be made.

Mullins (1979) found, in a broad survey across the Piedmont, the North Pacific Border and the Southern Rocky Mountains, that park visitors demonstrated certain patterns of behaviors in relationship to interpretation. The study by Mullins did not focus on any one park in depth. If the findings from a wide range of parks tend to hold true for individual parks studied in depth, then the findings from Mullins, this study and other associated studies would have greater external validity. This would not only contribute to what is known empirically about interpretation but may also prove useful in projects such as The National Park Service's "Annual Statement for Interpretation" (1979).

Need for the Study

One of the trusted principles of interpretation stresses the importance of knowing your audience (Tilden, 1977). Without a complete understanding of the visitor and their behavior, it is difficult to plan, program and evaluate interpretive events. Thus, a need for increased visitor-oriented research to acquire this knowledge is necessary.

In small-scale interpretive settings, such as metropolitan parks, repeat and local visitors comprise the majority of the interpretive audiences. In these settings, program and planning alterations are not frequently required. In contrast, large-scale interpretive settings, such as National Parks, have a visiting public that continually fluctuates. Interpreters must be aware of the phenomenon by remaining well informed about their particular clientele so they may plan accordingly. Since the National Park Service primarily relies on seasonal employees to conduct interpretive programs, visitor information must continually be updated to aid in successful and effective interpretation. The need for current on-going visitor-oriented studies is primary.

Staged within a National Park, this study should aid in obtaining and explaining necessary visitor information as well as contributing new and supportive knowledge to the field of interpretation with regard to visitor participation and nonparticipation in interpretive areas. The specific need which initiated this study was the assessment of participation at roadside exhibits along the Blue Ridge Parkway. By expanding the scope of this idea to include participation assessment of a variety of interpretive activities, i.e., self-guided walks, roadside exhibits, visitor center exhibits, visitor center stopping, evening programs and guided activities, a much broader range of data will result to satisfy the encompassing needs and provide greater possibilities for application.

Statement of Objectives

The following objectives guided this study:

(1) To assess participation and nonparticipation in selected interpretive activities over time on the Blue Ridge Parkway.

(2) To determine if the rank ordering of participation in selected interpretive activities remains the same throughout the study period.

(3) To determine if participation and nonparticipation is related to specific study variables or groups of study variables.

Statement of Research Hypotheses

The research hypotheses specified in this study directly correspond to the objectives. The three hypotheses to be tested are:

(1) A significant difference exists between the number of participants and nonparticipants in the interpretive activities observed.

(2) A significant difference exists in the rank order of participation in selected interpretive activities during the study periods of June, July and August.

(3) There is a significant relationship between participation/nonparticipation and any particular social aggregate, social group, time/environment, place or associated activity variable.

Definition of Terms

1. Interpretation -- "An educational activity which aims to reveal meanings and relationships through the use of original objects, by firsthand experience, and by illustrative media, rather than simply to communicate factual information" (Tilden, 1977).

2. Interpretive activities -- These include various activities found in many leisure and recreational settings. For this study, interpretive activities are defined as the following activities offered as a visitor service by the National Park Service (NPS), U.S. Department of the Interior. These activities consist of:

    a. Attending campfire or slide presentations
    b. Participating in guided activities, such as nature walks and demonstrations
    c. Asking for information
    d. Talking to interpreters/rangers
    e. Stopping at a visitor center
    f. Viewing visitor center exhibits

- g. Reading roadside exhibits
- h. Taking self-guided walks
- i. Reading park brochures or maps

3. Extensity -- The total percentage of visitors participating in each recreational activity (Cheek, 1978).

4. Participant -- Any park visitor who participated in the interpretive activity at the specific time of observation.

5. Non-participant -- Any park visitor who did not participate in the interpretive activity at the time of observation.

6. Social group variables -- Variables that measure group characteristics of socially intimate groups.

7. Social aggregate variables -- Variables that measure sociodemographic or socioeconomic characteristics of individuals.

8. Place variables -- Variables that measure certain characteristics of the setting (park) where interpretive activities take place.

Organization of Thesis

Chapter I serves as an introduction to interpretation and to the research problem. A review of related literature in the field of interpretation is presented in Chapter II. Research design and methodology are discussed in Chapter III. Chapter IV reports the results of the study, and Chapter V offers a discussion of the research data, conclusions and recommendations for further research.

CHAPTER II

REVIEW OF LITERATURE

Three broad areas of related literature furnish the groundwork for this study. The first section deals with the state of the art of interpretation. A brief history of interpretation is provided along with an overview of interpretive research. The second area of literature focuses on interpretive activities and their relationship to the visitor. The final section describes various means used in assessing visitor participation in interpretive and recreational activities which include social aggregate, social group and time/environment variables.

Interpretation - State of the Art

Interpretation, a relatively new and growing field, has received limited attention until the last decade (Morfoot and Blake, 1978). Historically, its initial roots extend further back to the late 19th century and the days of early nature guiding. Enos A. Mills, a naturalist and the father of nature guiding, led nature-oriented field trips in the Rocky Mountains (Weaver, 1976). Several other nature guides followed suit. In 1916, Mills urged Stephen T. Mather, first director of the National Park Service (NPS), to hire park guides, but was unsuccessful in his endeavor.

During this time period, Charles and Mary Goethe, through experience with European nature guiding, inititated an experiment which involved leading field trips and lecturing on nature-oriented topics in tourist lodges at Lake Tahoe, California. Mather attended one of these programs and was greatly impressed.

As a result, the first official nature guides (interpreters) were hired by the NPS.

The NPS's use of interpretation, has been incorporated by other outdoor recreational agencies. Within state park systems, interpretation has played either a central or peripheral role in the total park program, depending on the state and the park (Reyburn and Knudson, 1975). The U.S. Fish and Wildlife Service also provides interpretive programs at a few refuges, even though its general philosophy is "resource first, people last" (Gunn, 1979).

In the mid-20th century, numerous agencies, with programs aimed at interpreting the natural environment to the public, attained success in attracting increased numbers of visitors to their individual parks (Kuehner and Elsner, 1978). The general public was increasing its use of leisure time for outdoor recreation (Owens, 1970). Interpretation not only became important to the agencies involved, but also to society and the American economy.

In the past, interpretive research has varied greatly in range and depth. Studies with differing degrees of intensity have dealt with three major points: communications, resources and visitors. The majority of research has focused on the communications aspect with "how to" studies that emphasize technique. Examples include Reyburn and Knudson's (1975) study on the influence of advertising techniques on interpretive program attendance and Martinkovic's (1977) study on the use of positive and neutral nonverbal behavior by interpreters. Reyburn and Knudson found that attendance increased when some form of advertising was used, such as signs and notices. Advertising through personal invitations appeared to be the most important in terms of visitor response, but the time element involved limits the practicality of this technique. In the investigation by Martinkovic, positive nonverbal behavior was found to increase the visitor's enjoyment of the interpretive presentation and his positive emotional responses to the speaker more than the interpreter's use of neutral nonverbal behavior.

The effectiveness of various types of media has been researched in several studies. Wagar (1976a) studied the effectiveness of cassette tapes for interpretation on a nature trail. These tapes gave significantly greater visitor enjoyment and short-term retention of information than either trail signs or trail leaflets. Travers (1967) explained this phenomenon with the fact that visitors find the media used for entertainment more rewarding than the less dynamic media used for education. Mahaffey (1970), on the other hand, tested three audio-visual media (leaflets, signs and recorded messages) at a historic site, but found no difference in their effectiveness for information retention. However, recorded messages had a greater visitor preference over the other media tested. Likewise, Feldman (1978) found that recorded messages were equally as effective on other occasions. He concluded that "no one medium is best for all interpretive settings." Nevertheless, since the written word does play a major role in a considerable amount of interpretation, the need to communicate in a readable and interesting manner is of utmost importance. According to Hunt and Brown (1971), several agency publications tended to be difficult to read and uninteresting to visitors. Thus, this problem limits the publication's effectiveness with the desired audiences.

Limited communications research has dealt with the ultimate transmitter of information -- the individual interpreter. Through a study of their educational curriculum, Mahaffey

(1973) found that most interpreters were not trained in interpretation. Most of them had natural science degrees, primarily biology. Similarly, Oltremari (1974) discovered that interpreters were trained in subject matter instead of techniques. Mullins (1975) suggested that interpreters in general strive to continue their education through both on and off-the-job reading of technical literature.

Studies focusing on the interpretive resource have stressed the need to investigate the resource to determine its total significance. A study of Ohio recreators found that areas with the most intensive demand were within or near population centers (Owens, 1970). Different park types (natural, historical and recreational) studied by Silvy (1977) were found to have a significant influence on interpretation. According to Silvy's results, "visitor perception regarding the function of interpretation differed when measured by park type." Wagar (1966) suggested that "through interpretation we can make each person's recreational experiences more meaningful and can make major attractions out of what seem to be very ordinary places." To analyze the interpretive setting, the technique of "Visitor Employed Photography" was designed and implemented by Cherem and Traweek (1977). Visitors were given cameras with instructions to photograph scenes they considered positive or negative. The resulting pictures reflected how the visitors perceived the site. The information from Cherem and Traweek's study could be used in interpretive planning and as a means of evaluating the effectiveness of various programs and facilities.

Visitors have received limited attention in interpretive research. According to Morfoot and Blake (1978), visitor-oriented interpretive research is a fairly recent innovation, established only since 1970. Gunn (1979) stated that since so little is known about the visitor (i.e., where he comes from, what he seeks, what he knows and how he'd like to use resource areas), great opportunities exist to observe, understand and encourage the visitor. Since effective interpretation requires knowledge of clientele groups, "an understanding of individual behavior and group influences upon behavior is especially important for personnel responsible for interpretation" (Field and Wagar, 1974). "The more you know about the visitor, the more effectively you can plan, evaluate, and conduct successful interpretive programming" (Hanna and Silvy, 1978).

The few published studies have focused on visitor characteristics, motivations and perceptions in relation to interpretation. To help the U.S. Forest Service plan interpretive services on the Eleven Point National Scenic River, Bousquet (1976) observed canoeists to determine certain behavioral and demographic characteristics and activity patterns of the river's visitorship. Veverka (1978) investigated the importance of understanding visitor motivations in planning for interpretive services. Program topics were found to stimulate various specific motives for that topic selection. Topic choice preferences also tended to change from age group to age group. Roggenbuck (1979) urged interpreters to be aware of visitors' expectations. He felt this awareness was important for providing meaningful and satisfying experiences for visitors.

Special visitor populations and their effect on interpretation have also received research attention. Nature interpretation for the mentally retarded was the concern of one study (Winzeler, 1976). A highly sensory, dynamic, elementary level presentation was determined to be the most effective means of interpreting for this special group. Handicapped persons, studied by Beechel (1975), were found to have goals and needs that were similar to other recreationists. In only limited instances were special accommodations necessary. On the contrary, since most handicapped persons neither wanted nor needed special facilities, they tended to regard them as a form of segregation. Bultena, Field and Renniger (1978) focused on the population of retired visitors. Even through the elderly comprise a substantial part of the total park-going public, they were quite often found to be an under-estimated segment in terms of numbers of the participants in interpretive programs. Generally, interpretive programs tended to be superficial, uninformative and geared to the first-time visitor, and therefore, failed to offer the challenging and in-depth types of insights and experiences the elderly wanted and needed.

Interpretive Activities

Many leisure and recreational settings feature interpretive activities. These activities are often viewed as a group of relatively similar activities that serve as a means to an end and not an end in themselves (Cheek, Field and Burdge, 1976). According to Sharpe (1976), interpretive activities serve four broad functions: enrich experience, enhance understanding, broaden horizons and protect the environment.

The most extensive set of interpretive activities are provided by the National Park Service areas (Mullins, 1979). With its nationwide exposure, the NPS has assumed the role of supplying a diverse array of activities to serve the visiting public.

In water based recreation, the set of activities in which a particular visiting group engages is referred to as their activity package (McCool, 1978). An activity package tends to be established primarily by the type of social group rather than the type of activities. The impact of the social group in interpretive activities has been investigated and verified by several studies (Silvy, 1977; Cheek, Field and Burdge, 1976; Hanna and Silvy, 1978; Hendee, Gale and Catton, 1971; Kuehner and Elsner, 1978; Burch, 1964). Hendee, Gale and Catton categorized interpretive activities as sociable learning, since they consist of a combination of both social and learning activities. The intentional social interaction with others is assumed to be a primary source of satisfaction. Although documented studies have verified the influence the social group has had on interpretation, the importance of the interpretive activity should not be overlooked.

Two wide categories of interpretive activities -- personal and nonpersonal -- have been described by Sharpe (1976) and verified by Mullins (1979). Personal or attendant services involve visitor contact by an interpreter, whereas nonpersonal or unattended services do not. Cherem and Traweek (1977) suggest that "guided (personal) interpretive services are in many ways the bread and butter of our field." Accordingly, the success of a personal service depends on the interpreter's skill, the site's features and the interpreter's understanding of visitor perceptions and backgrounds. Effective communication of material is equally as important. In personal services, face to face methods are employed to communicate with the visitor, while mass media are used with nonpersonal services (self-guided walks, exhibits, publications) (Hodgson, 1975).

Numerous investigations have focused on both personal and nonpersonal activities, but only a few have considered the effectiveness of activities. This lack of information makes it difficult to compare and generalize specific results. For instance, St. Clair (1972) found no difference in effectiveness between guided walks (personal) and slide shows (nonpersonal); whereas Wagar, Lovelady and Falkin (1976) discovered that unmanned (nonpersonal presentations) had higher contact factors than personal activities, such as demonstrations, which many visitors seemed to avoid. A discrepancy of this sort is seemingly due to many extraneous factors, such as weather conditions, time of day or day of week, which prevent generalizations. Other studies showed greater agreement in their results. Shiner and Shafer (1975) observed visitors viewing exhibits and found that the average viewing time was always less than the average required reading time. The ability of a message to attract and hold the audience's attention (Dick, Mylkestad and Wagar, 1975) accounted for Shiner's results. In a similar manner, Kuehner and Elsner (1978) found that for static displays, visitor attention was often hasty and shallow. Exhibits that were dynamic, animated or allowed involvement with subject matter, ultimately attracted greater visitor attention and interest. Mahaffey (1970), Wagar (1972), Lime (1973) and Washburne and Wagar (1972) each made similar conclusions in terms of interest.

Limited research has dealt with participation in interpretive activities. However, in one study, Mullins (1979) discovered a significant difference between participants in personal and nonpersonal activities. Less than 50 percent of all park visitors were found to participate in personal activities, which limited attendance. The participants primarily tended to be repeat visitors and avid parkgoers, who participated extensively over a wide range of interpretive settings. In contrast, participants in nonpersonal activities included more than 50 percent of all part visitors. These participants tended not to be in-state residents. The apparent variation between the two activity categories -- personal and nonpersonal -- in terms of participation was significant and suggested a possible framework for further investigations.

Participation Assessment

Participation in interpretive activities is commonly assessed in terms of two major sets of variables: social aggregate varibales (sociodemographic/socioeconomic) and social group variables (Irwin, 1978; Bousquet, 1976; Silvy, 1977; Field and O'Leary, 1973). These variables, well-established in interpretive research, try to explain some variance in interpretive activity participation. Additional time/environment variables are less often utilized in participation assessment (Morfoot and Blake, 1978). Extensity, which measures how widespread participation occurs, is another measure for assessing participation (Cheek, 1978). Each of these sets of variables and measures will be discussed.

Social Aggregate Variables

Individual characteristics are considered in the social aggregate variables which traditionally consist of both socioeconomic and sociodemographic characteristics, such as education, age, sex, race, income, state of residence, occupation, number in household and number of children under 18. According to Wandersman (1979), individual differences played an important role as influencers of who participated, who did not participate and at what levels they participated. Besides their application in assessing participation, social aggregate variables also served as an important ingredient for interpretive planning and for the development of an information base for specific interpretive activities (McDonough, 1977).

Race appears to be a factor in rate of participation among visitors. Owens (1970) found whites participating more than non-whites in various activities. Mahaffey (1970) studied an historic site in Texas and tested a smaller percentage of blacks than composed the total state population. According to Washburne (1978), all segments of society do not participate equally, which accounts for the pronounced and well-recognized nonparticipation by blacks. However, when matched on selected socioeconomic-status variables (income, occupation, education), few differences in participation were apparent between blacks and whites (Cheek, Field and Burdge, 1976). Bultena and Field (1978) found similar relationships in a study of National Park Service visitors from the Pacific Coastal Region.

A visitor's age has a tendency to reflect the number of activities participated in and the varying degree of participation. Both number and degree of participation have been found to decline with increasing age when less strenuous, more passive pursuits are apt to be greater in popularity (Zuzanek, 1978; Reyburn and Knudson, 1975; Burdge and Field, 1972; Washburne and Wagar, 1972; Lee, 1972; Hendee, Gale and Catton, 1971; Owens, 1970).

Sex of the visitor fails to be a strong determinant between participants and nonparticipants since studies report conflicting results. Washburne and Wagar (1972) claimed that sex of the visitor made a significant difference in participation rates, while Zuzanek (1978) stated that little effect was contributed by this variable. Education, occupation and income, the more traditional social aggregate variables, have frequently proven their ability to distinguish participation differences and subsequently have received more use. In general, participants have tended to be better educated, hold nonmanual occupations and earn higher average incomes compared with nonparticipants (Hendee, Gale and Catton, 1971; Cheek, Field and Burdge, 1976; Mullins, 1979; Owens, 1970; Irwin, 1978; Silvy, 1977; Bultena and Field, 1978; Zuzanek, 1978; Field and O'Leary, 1973; Washburne and Wagar, 1972; Kuehner and Elsner, 1978).

An investigation by McCool (1978) revealed that participation was related to residence, i.e., in-state/out-of-state. Participants tended to be out-of-state visitors who were interested in seeing and learning less active, new social learning types things instead of participating in familiar activities. In-state/local residents, on the other hand, were inclined to participate in more active events that allow a physical relationship with the resource. Wagar, Lovelady and Falkin (1976) found that of the visitors to the Pacific Science Center, Seattle, Washington, over half were out-of-state residents on their first visit. However, in a study of Texas State Parks, Silvy (1977) discovered that the majority of participants were in-state residents within a day's drive from home. To explain these findings, the resource, or park type, was considered. Silvy suggests that the results were a function of the setting of the park and park type since state parks generally have regional or statewide significance and attract visitors from local areas.

Two of the less frequently noted characteristics of social aggregate variables have shown significant differences between participants and nonparticipants. In a study of Ohio recreators, Owens (1970) found that participation was significantly lower for families with children under 10 years of age. Additionally, in a study of park visitors in the Southern Rocky Mountain Region, Mullins (1979) concluded that the total number in a household was significantly different between participants and nonparticipants to interpretive activities. Participation was greater for households with smaller numbers of members with the exception of the single member household.

Social Group Variables

Social group variables which focus on the group as a whole appeared to be more effective in explaining different participation rates than social aggregate variables (Field and O'Leary, 1973). The choice of participating in an activity was rarely an isolated, individual decision due to the significant influence one receives from his/her affiliation with a specific class, family or peer group (Christensen and Yoesting, 1973). According to Kwant (1965), people tended to seek crowded recreation areas, because they like to be together and seek intimate and intense ways of being in contact with their fellowmen. Therefore, an activity is much more conducive to participation if one is within a group rather than alone (Field and O'Leary, 1973). Since interpretive activities, which occur in social settings, are not organized in terms of the individual but in terms of the participating units, the importance of the involved social organization (group) might be a consideration.

In the late sixties, little effort was extended to study the "group," since leisure studies were generally based on random samples which tended to sample out the connectedness of humans (Meyersohn, 1969). Recently, however, more emphasis has been placed on the social group since it is believed that the social group and its composition significantly affect participation (Hendee, Clark and Dailey, 1974; Field and Wagar, 1974; Cheek and Burch, 1976; Mullins, 1979). To know how people organize themselves to play is much more important than to know what activities they participate in (Cheek, Field and Burdge, 1976).

Social group variables employed in participation assessment include such factors as group type, number in the social group, residential stability, stage in life cycle, number of children under 18 in social group and social position. The predominant group type, the family, has been found to be the most common social unit in which interpretive participation occurs (Cheek and Burch, 1976; Field and Wagar, 1974; Lime, 1973; Cheek, Field and Burdge, 1976). Lime (1973) found that most visitors at Forest Service visitor information centers were in family groups, and they tended to spend more time within the centers participating in various interpretive activities. Through analyzing the sociological characteristics of local parks, Cheek and Burch (1976) computed that 78 percent of the social groups attending the parks were members of non-organized groups, i.e., family and friends. With family groups, the presence of children has frequently been noted. Kuehner and Elsner (1978) observed visitors on the Rainbow Trail in California and found that 63 percent of these visitors were traveling with children. However, Bollman, Moxley and Elliott (1975) found that families with preschool children tended not to participate to the extent of those with other children. Preschool children were an even greater inhibitor of participation than lack of money. This factor is apparent in a study by Owens (1970) of a typical family life cycle. In Owens' study, the family had high participation when first married. This participation dropped off sharply as children were born, slowly increased as they matured, than gradually declined again with age.

Group size was mentioned by Lee (1974) as being important in differentiating participants from nonparticipants. Irwin (1978) and Wagar, Lovelady and Falkin (1976) found couples as the most common group size. In Bousquet's (1976) study of river floaters, the groups tended to be small, but a median of five was recorded. Similarly, Kuehner and Elsner (1978) stated that more than half of their trail visitors were in groups of four or more. The number in the social group was seen to directly correspond with participation in interpretive activities. Mullins (1979) found that the smaller the number in the group, down to one, the larger the number of activities participated in. He also suggests that residential stability corresponds with participation: the less permanent a visitor's residential stability, the more activities they participated in.

Time/Environment Variables

The influence of time/environment variables has been shown to indirectly cause major effects on participation. The effect of weather conditions on participation and attendance is mentioned and supported in numerous studies (Dorfman, 1979; Godin and Matz, 1976; Morfoot and Blake, 1978; Reyburn and Knudson, 1975; Hecock, 1969; Webb, et al., 1971). Weather may contribute to satisfaction and dissatisfaction of activities, affect attendance and influence activity effectiveness.

The broad variable time indirectly affects participation and includes such factors as time of day, day of week and month/season of the year. Wagar (1972) found that with his recording quizboard, visitor responses changed after Labor Day. This difference was primarily caused by a corresponding change in participant's age group. Unequal participation rates in water-based recreation activities were also found by McCool (1978) between day users and campers, or extended day users. With a more constrained time budget, the day user participated in more activities, but devoted less time to each.

Physical (environmental) site characteristics also affect participation (Hecock, 1969; Cherem and Traweek, 1977; Silvy, 1977; Owens, 1970; Mullins, 1979; Taylor and Knudson, 1973). Taylor and Knudson found that scenery was an important attraction factor, distance was a major barrier and proximity to home was the primary reason campers preferred a particular park or area.

These time/environment variables consequently influence the effectiveness of interpretive activities. Unfortunately, they have not been directly controlled or reported in past studies (Morfoot and Blake, 1978). More detailed accounts of the affects of these variables are needed in the future.

Extensity

Participation in interpretive activities has also been assessed through the measure of extensity. Cheek (1978) suggested this measure and defined extensity as "how widespread or extensive participation occurs in a population or how many people do it." Mullins (1979) employed the measure of extensity which he computed by calculating the number of participants in an interpretive activity divided by the total number of visitors.

Mullins found that interpretive activities had different rates of participation based on whether the activity was personal or nonpersonal. The highest number of participants was within the nonpersonal activity group, while the lowest number was in the personal activity group. When compared with social aggregate and social group variables, extensity was also significantly related to the following characteristics: number in household, number in social group, number of household members in social group, years of residency in present home state and years of residency within 50 miles of present home. Thus, the value of incorporating the measure of extensity when assessing participation is established and will be utilized in this study.

Summary

From its ancestral beginnings in nature guiding, interpretation gradually evolved as an acknowledged field of endeavor, and has recently experienced a rapid rise in importance. Considerable numbers of investigations concerning interpretation have been reported, but these tend to be varied in scope and purpose. The majority of these studies dealt with the communications aspect of interpretation, while the visitor and the resource were of lesser concern. Major emphasis frequently focused on evaluating interpretive effectiveness, but because of conflicting results, the outcomes show limited success.

Effective interpretation is largely conveyed through various interpretive activities, which may be either personal or nonpersonal as determined by the presence of an interpreter. Visitors, the interpretive audience, personally choose to participate in these activities. To understand visitors in terms of their participation provides insight regarding how effective this form of interpretation actually is. Limited research, however, has been devoted to participation assessment.

Specific visitor characteristics have been gathered to assess participation through two approaches: social aggregate and social group variables. Time/environment factors which are readily determined have supplied information on indirect influences of participation. Extensity, which determines how widespread participation occurs in a population, is an additional measure for assessing participation.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

The success and effectiveness of an interpretive event relies heavily on a thorough and complete understanding of the clientele group composing the interpretive audience. Such information and knowledge largely aids the interpreter with his prior planning and programming of the event. This study is designed to gather and explain visitor data through the assessment of participation in various interpretive activities.

A review of the related literature shows a marked research emphasis focusing on techniques, primarily communication factors, applied in interpretation and the vast amount of information obtainable through studying visitor, group and activity variables. Limited sources exist, however, that deal specifically with visitor participation assessment that may be generalized among different settings. This study assesses participation in interpretive activities for a specific location. The results will be analyzed and compared with other studies to add meaning to what is currently known about interpretation.

This chapter details the research design and methodology utilized. Five major categories are discussed: design consideration, data collection, study variables, data analysis and study limitations.

Design Considerations

The intent of this study is to gather and explain information pertaining to visitors on the Blue Ridge Parkway who do or do not participate in interpretive activities provided by the National Park Service. The research design employed is categorized as descriptive-correlational research, designed to systematically describe the facts and characteristics of a given population and to explain relationships between these variables (McCracken, 1980). A systematic selection sample of Blue Ridge Parkway visitors during June, July and August, 1979, is the study population.

To accurately obtain the needed data about visitor characteristics, unobtrusive measures are incorporated as the design procedures. This set of novel or sometimes "oddball" measures directly records characteristics and behaviors as they occur (Webb, et al., 1971). By unobtrusively observing behavior, past or present occurrences may be described and explained. Systematic observation produces reliable, valid and accurate results about "what is happening" (Clark, 1977). According to Webb, et al., unobtrusive measures produce information that is obtained without direct cooperation from respondents since they are unaware that they are being studied. Due to the nonreactivity of unobtrusive measures, certain experimental problems, such as the guinea pig effect, role selection and response bias, are reduced. Thus, the total reliability of the results is strengthened.

Participant observation, the major unobtrusive measure instituted in this study, is an efficient, systematic technique for observing, recording and evaluating behavior (Clark, 1977). In this approach, the observer either poses as another visitor or employee and interacts with the visitors or observes from an inconspicuous place. Observations are made and recorded on specific forms or observation schedules, which consist of a formal listing of items to be recorded as they occur that subsequently aids in focusing attention on some key unit of observation (Campbell, 1969).

According to Burch (1964), a major advantage of recording unobtrusive observations as they occur is that data will not be subject to faculty recall. However, observation techniques are limited in reliability and validity since "we cannot be certain that what the observer says is so and we are not certain how consistent the observations of independent observers will be with one another" (Burch, 1964). Thus, the ultimate quality of the observation is always dependent upon the quality of the investigator (Burch, 1964).

Most professional interpreters agree that an interpretive program can be offered to visitors, but not forced upon them, thus the use of nonreactive unobtrusive measures appears to blend with the general interpretive approach (Bousquet, 1976). Since this study has a descriptive-correlational research design and seeks to describe and explain the facts and characteristics of a given population, unobtrusive measures are considered to be appropriate procedures for obtaining data.

Data Collection

Data Set

This study employed a single data set from the Blue Ridge Parkway in North Carolina. This data set consisted of cases collected through a systematic sampling method from June 13 to August 30, 1980. Unobtrusive observations were gathered and recorded for six different interpretive activities (self-guided walks, roadside exhibits, visitor center exhibits, visitor center stopping, evening programs and guided activities) provided as a visitor service by the National Park Service. A 90 mile stretch on the southern section of the Blue Ridge Parkway served as the setting for the study (Figure 1). This scenic road-

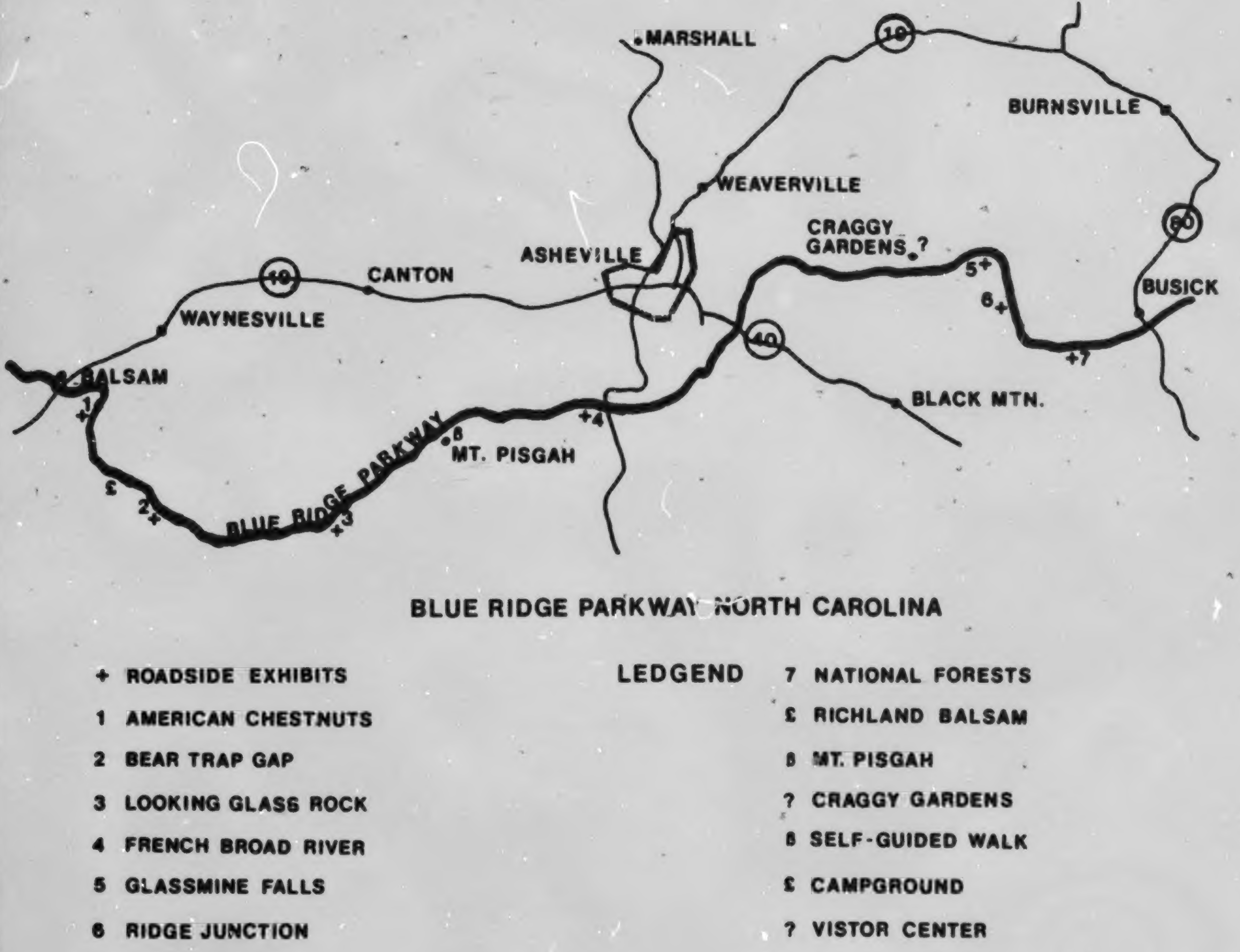
MARSHALL
19
BURNSVILLE
WEAVERVILLE
CRAGGY
GARDENS ?
80
ASHEVILLE
19
CANTON
5+
6+
BUSICK
WAYNESVILLE
40
+7
BALSAM
1+
BLACK MTN.
+4
8
MT. PISGAH
£
2+
+3
BLUE RIDGE PARKWAY
BLUE RIDGE PARKWAY NORTH CAROLINA
LEDGEND
+ ROADSIDE EXHIBITS
1 AMERICAN CHESTNUTS
2 BEAR TRAP GAP
3 LOOKING GLASS ROCK
4 FRENCH BROAD RIVER
5 GLASSMINE FALLS
6 RIDGE JUNCTION
7 NATIONAL FORESTS
£ RICHLAND BALSAM
8 MT. PISGAH
? CRAGGY GARDENS
8 SELF-GUIDED WALK
£ CAMPGROUND
? VISTOR CENTER

FIGURE : 1

LOCATION OF STUDY SITES ALONG THE BLUE RIDGE PARKWAY

way was selected as the research setting due to its diverse array of interpretive offerings strategically located along the route and an expressed need by park interpreters for information about what occurs and when. Each of the three hypotheses for this study will be tested with the Blue Ridge Parkway data set.

Observation Forms

Six unobtrusive observation forms were designed that corresponded with the six interpretive activities under investigation (self-guided walks, roadside exhibits, visitor center exhibits, visitor center stopping, evening programs and guided activities). An additional form was developed to record visitor data on drive-bys for both roadside exhibits and self-guided walks. A rough draft of each form was formulated in May, 1979, incorporating the styles of several sources (Millins, 1979; Hanna and Silvy, 1978; Field, 1978). After consulting with advisers, revisions were made and the final drafts of the observation forms were printed. Appendix A contains a final copy of each of the seven observation forms.

Data gathering was accomplished with the observation forms via a systematic sampling method. Unobtrusive observations were made throughout the study periods, which spanned the summer months (June, July and August) of 1979. Randomization, beyond individual sampling, was employed concerning time, date, day of week and weather to reduce sampling bias. The sampling locations, selected primarily on the basis of the provided services, consisted of several visitor concentration sites along the Blue Ridge Parkway where interpretive activities took place.

Systematic sampling involved selecting every n^{th} observation unit at some set interval, as recommended by Sax (1979). An observation unit included each social group for which observable information could be gathered. Systematic sampling gave assurance that there was broad sampling throughout the population, and therefore, provided a more accurate sample (Sax, 1979). In this study, an n value was chosen which varied accordingly with the flow of observation units. For example, if visitor flow was moderate and an n value of three was selected, every third observation unit was sampled. When visitor flow was low, each observation unit was recorded; as flow intensified, the n number grew.

Additional data were collected for four of the activities concerning the extensity of participation. For self-guided walks, roadside exhibits and visitor center stopping, the number of automobiles stopping at the sites was divided by the total number of automobiles both stopping and passing. The computed percentage of stopped cars revealed how widespread or extensive the participation was. Inside the visitor center, tallies were kept recording total number of visitors, total number of purchases, total number of visitors viewing exhibits and total number of visitors talking to the ranger/interpreter. Percentages were determined for the various activities associated with viewing visitor center exhibits. To assess the drive-bys (nonparticipating park-goers who did not stop at the roadside exhibits or self-guided walks), further observations were recorded to compare with data on the visitors who did stop, but did not participate at these sites.

Study Variables

Observations supplied pertinent data on observable study variables which were arranged in five groups: social aggregate variables, social group variables, interpretive activity variables, social group variables, interpretive activity variables time/environment variables and place variables. Social aggregate variables dealt with the individual's characteristics, while social group variables focused on the group as a collection of socially intimate individuals. Interpretive activity variables related to the specific event and its associated activities. Time/environment variables involved the effects from outside sources and factors, while place variables concerned specific site factors affecting the situation.

Social Aggregate Variables

Social aggregate variables were incorporated in this study to identify specific individual traits related to interpretation. The description of the overall data set included social aggregate variables related to specific characteristics of participants and nonparticipants. Hypothesis 3 employed social aggregate variables in an attempt to distinguish participants from nonparticipants in interpretive activities. The social aggregate variables noted in this study were age, race, and state of residence.

Age was estimated according to previously documented age categories which correspond to social age (Mullins, 1979). Race was determined by skin color, facial features and speech. The following six categories were selected: Black, Caucasian, Oriental, American Indian, mixed (combination of other categories) and a composite of all racial groups not belonging to specified categories. State of residence, recorded as whether the observation unit resided in-state (North Carolina) or out-of-state, was recorded from automobile license plates.

Social Group Variables

Social group variables, measures related to primary associations among a number of individuals, have become increasingly important to leisure research (Field and O'Leary, 1973; Mullins, 1979). Since the majority of recreation occurs in groups of individuals who maintain some form of social bond, the social group and its related characteristics have become primary units of analysis. Hypothesis 3 incorporated two social group variables to help explain participation/nonparticipation in interpretive activities. Group type and number in social group were the two variables noted.

Visitor groups were identified as to whether or not they: arrived or departed at the same time, moved together, approached other members directly and without hesitation, directed other's attention to an activity, conversed with other members and gazed around to check on other members. The observed group types were predetermined by these six categories: alone, with family and friend(s), with friends, with immediate family, with immediate family and other relatives and with organized group. Number in social group was the observed number of people within a group calculated by direct counting. Strong implications can be made from number of social group to group type, especially when age and sex are taken into consideration (Mullins, 1979; Cheek and Burch, 1976).

Interpretive Activity Variables

Interpretive activities include various activities provided in many leisure and recreational settings. The following interpretive activities are examples of the visitor services offered by the National Park Service (NPS):

1. Attending campfire or slide presentations -- an activity in which the participant attends and listens to an inter-

preter give a campfire program or slide presentation.

2. Participating in guided activities -- an activity in which an interpreter guides participants on a walk or tour or in which a participant watches and/or engages in a particular demonstration.

3. Asking for information -- an activity in which the participant obtains information on his/her own to aid in his/her interpretation of the park.

4. Talking to interpreters/rangers -- an activity in which the participant gains park information through conversing with an interpreter or park ranger.

5. Stopping at a visitor center -- an activity which involves visiting certain types of centers employing various interpretive mediums.

6. Viewing visitor center exhibits -- an activity where participants view a visitor center's interpretive exhibits.

7. Reading roadside exhibits -- an activity in which the participant stops along the park road to read interpretive exhibits.

8. Taking self-guided walks -- an activity in which the participant walks a route using such interpretive mediums as interpretive signs, pamphlets or recorded messages.

9. Reading park brochures or maps -- an activity in which the participant uses brochures or maps to interpret the park.

This study included and incorporated these interpretive activities. In addition, the following associated activities were observed and examined. Overall length of the activity and time spent at the site varied between indiviudal activities and groups. Specific observations were conducted in the visitor center concerning the number of exhibits read, time devoted to reading, visitor flow pattern and the occurrence of overt social interaction with others beside the ranger. Additional observations were taken at roadside exhibit sites that dealt with who read in the group, if they read aloud, time spent reading and the number of other social groups at the site during observations.

Due to the visitors' reliance on the types of things provided by and related to the site, other associated activities were noted that were participated in at the site. Whether or not visitors brought pets (dog,cat, other, combination) was recorded where applicable, as well as whether or not the visitor possessed special equipment such as cameras, binoculars and bicycles. Information pertaining to the activity of transportation and dwelling (vehicle/lodging) was categorized into eight choices: self-propelled motor home, hard top trailer, van or pickup camper, collapsible trailer, tent camper, fixed lodging, motorcycle and not available.

Time/Environment and Place Variables

Several time/environment variables were incorporated in this study to aid in assessing the likelihood of participation in interpretive activities. Although these variables have not been considered direct influencers on the act of participating, their indirect effect is regular and draws definite research attention. All three hypotheses utilized the influence of time/environment variables to varying degrees. Hypothesis 2 specifically focused on the effect the month or particular study period (June, July, August) had on participation.

The time/environment variables emphasized in this study were date, weather, time of day and day of week. Date described the specific study periods. Three choices were possible for weather: sunny, overcast/foggy and inclement. Morning, afternoon and evening were the time of day selections, and day of week was either weekday or weekend. Each of these variables was determined and noted at the outset of the observation period. Observation times were randomly selected in an effort to obtain equal effects from each level of the variables.

Place variables involved characteristics associated directly with the site where the specific interpretive activity took place. Hypothesis 3 employed effects caused by two place varibales: site and access. For some activities, the effects of the site locations that served as observation points were recorded. Access, either direct or indirect, described whether or not a visitor group had to cross a lane of traffic on the Blue Ridge Parkway to reach the interpretive site. With different sites, access was investigated for change that would also possibly affect participation.

Data Analysis

Analysis of the data set and testing of the hypotheses were accomplished through specific procedures and techniques. This section summarizes the statistical techniques utilized, and their application to each hypothesis is discussed.

Statistical Techniques

The data produced through observations was statistically manipulated by the Statistical Package for the Social Sciences (SPSS) (Nie, et al., 1975). The major statistical techniques used in analyzing the data were: chi-square and gamma. In addition, frequency measures were calculated for the overall data set description. In Hypotheses 1, 2 and 3, the chi-square test statistic was used. Gamma scores were also applied to Hypothesis 3.

Chi-square. The chi-square test statistic was applied in the testing of Hypotheses 1, 2 and 3. Chi-square is useful as a basis for a test of significance when comparing the frequencies of two or more responding groups with nominal level data

(Loether and McTavish, 1974b; Isaac and Michael, 1977). According to Isaac and Michael, chi-square attempts to answer "whether the frequencies observed in the sample deviate significantly from some theoretical or expected population frequencies."

To compute the chi-square (χ^2) statistic, the following formula was used:

$$\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

where f_o was the observed frequency for a cell and f_e was the expected frequency for the same cell (Loether and McTavish, 1974b). If more than 20 percent of the observed cells within a table equaled less than five, chi-square values were not computed. In addition, no chi-square values were calculated if the expected frequency in a cell was less than five. An alpha level of significance of 0.05 was set for all chi-square tests, and for other statistical tests utilized by this study. Therefore, with all factors remaining equal, a replication of the statistical tests for the same study population would result in an identical outcome 95 out of 100 times.

Gamma. Whereas chi-square tests measure the significance between two or more groups of responses, gamma scores measure the degree of association, or strength of relationship, between these groups of responses. Applicable with any sized contingency table, gamma varies between -1 and +1, revealing the direction of the association, and requires at least ordinal level data (Loether and McTavish, 1974a). The following formula determines gamma:

$$G = \frac{P - Q}{P + Q}$$

where P is the number of concordant (agreeing) pairs which is ranked in the same order on both variables, and Q is the number of discordant (disagreeing) pairs which is ranked in the opposite order on both variables (Nie, et al., 1975; Loether and McTavish, 1974a). Gamma, i.e., a measure of association, will be positive if concordant pairs predominate, negative if discordant pairs predominate, and zero if they are equal. Gamma was used to test Hypothesis 3.

Frequency Measures. The testing of Hypotheses 1, 2, 3 and the subsequent overall description of the data set employed the following distributional statistics, or frequency measures: absolute frequency (the total number of cases noted for each observation category), relative frequency (the percentage of time a given observation was recorded relative to the total) and adjusted frequency (the percentage of time a given observation was recorded relative to the total, with missing cases removed)(Maynard, 1979). In the overall description of the data set, these measures showed the number or proportion of cases falling within a particular category.

Statistical Hypotheses

Hypothesis 1: A significant difference exists between the number of participants and nonparticipants in the interpretive activities observed. Prior to testing the hypothesis, the data generated by this study was compiled, coded and tabulated with regard to the frequency measures. All of the study variables were totaled for each of the six observed interpretive activities to accurately describe the data set. Testing this hypothesis involved assessing the participant/nonparticipant variable for the four nonpersonal interpretive activities: self-guided walks, roadside exhibits, visitor center exhibits and visitor center stopping. The two personal activities -- evening programs and guided activities -- were excluded from the testing of Hypothesis 1 due to sampling procedures. Since these two activities are designed for group participation, the observer chose a specific number of participants and nonparticipants to observe. Thus, the observations between these two categories tended to be equally represented.

The chi-square test of independence was utilized to test Hypothesis 1. This statistical test was computed for the contingency table that cross-tabluated the four nonpersonal activities with participants/nonparticipants. To further explain the chi-square values, data regarding the extensity of participation were also incorporated in the hypothesis testing. The statistical hypothesis for each nonpersonal interpretive activity states: there is no significant difference between the number of participants and nonparticipants in the interpretive activities observed.

Hypothesis 2: A significant difference exists in the rank order of participation in selected interpretive activities during the study periods of June, July and August. The extension of the median test was utilized in the testing of the hypothesis. This statistical test determines whether k independent groups have been drawn from the same population or from populations with equal medians (Siegel, 1956). To apply the test, the median value was first determined for the number of participants in each study period for all six interpretive activities. Next, each number was replaced by a plus if the vaule was above the common median and by a minus if it was below the median. The resulting frequencies of pluses and minuses were placed in a 3 x 2 contingency table. The chi-square test of independence was then computed to determine significance. Due to a small sample size, the chi-square assumption regarding cell size was violated. However, the trends in participation remained evident.

To further test Hypothesis 2, a cross-tabulation of the three study periods with the total number of participants in each of the six interpretive activities was performed. A rank ordering of activity participation for the three study periods was also utilized for testing the hypothesis. The statistical hypothesis states that no significant difference exists in the rank order of participation in selected interpretive activities during the study periods of June, July and August.

Hypothesis 3: There is a significant relationship between participation/nonparticipation and any particular social aggregate, social group, time/environment, place or associated activity variable. To test this hypothesis, the participant/nonparticipant variable was cross-tabulated with all of the social aggregate, social group, time/environment, place and associated activity variables for each of the six interpretive activities. Table 1 lists the study variables utilized in each interpretive activity. Chi-square aided in testing the significant difference between participation and the various study variables. Since some of the study variables had under represented sub-categories, the resulting contingency tables displayed improper cell sizes; thus, the chi-square assumption was violated.

Study Limitations

This study has several limitations which prevent direct broad scale generalizations of findings to other interpretive site populations. First only sites on the southern portion of

TABLE 1

STUDY VARIABLES BY INTERPRETIVE ACTIVITY

SELF-GUIDED WALKS

- Social Aggregate
  - Social Age
  - Race
  - Residence
- Social Group
  - Group Type
  - Total Number in Group
- Place
  - Access
  - Site
- Time/Environment
  - Date
  - Weather
  - Time of Day
  - Day of Week
- Associated Activity
  - Vehicle/Lodging
  - Talked to Ranger
  - Pets
  - Amount of Time on Trail
  - Special Equipment
  - Other Activities at Site

ROADSIDE EXHIBITS

- Social Aggregate
  - Social Age
  - Race
  - Residence
- Social Group
  - Group Type
  - Total Number in Group
- Place
  - Access
  - Site
- Time/Environment
  - Date
  - Weather
  - Time of Day
  - Day of Week
- Associated Activity
  - Vehicle/Lodging
  - Talked to Ranger
  - Pets
  - Special Equipment
  - Other Activities at Site
  - Exhibit Type
  - Length of Time at Overlook
  - Who Read in the Group
  - Who Read Aloud
  - Reading Time
  - Number of Groups at Site at Same Time

VISITOR CENTER EXHIBITS

- Social Aggregate
  - Social Age
  - Race
- Social Group
  - Group Type
- Place
  - Site
- Time/Environment
  - Date
  - Weather
  - Time of Day
  - Day of Week

TABLE 1 (CONTINUED)
STUDY VARIABLES BY INTERPRETIVE ACTIVITY

VISITOR CENTER EXHIBITS (CONTINUED)

- Associated Activity
  - Vehicle/Lodging
  - Pets
  - Special Equipment
  - Other Activities
  - Length of Activity
  - Number of Exhibits Read
  - Reading Time
  - Social Interaction
  - Flow Pattern

VISITOR CENTER STOPPING

- Social Aggregate
  - Social Age
  - Race
  - Residence
- Social Group
  - Group Type
  - Total Number in Group
- Place
  - Access
  - Site
- Time/Environment
  - Date
  - Weather
  - Time of Day
  - Day of Week
- Associated Activity
  - Vehicle/Lodging
  - Talked to Ranger
  - Pets
  - Special Equipment
  - Other Activities
  - Length of Activity

EVENING PROGRAMS

- Social Aggregate
  - Social Age
  - Race
  - Residence
- Social Group
  - Group Type
  - Total Number in Group
- Place
  - Site
- Time/Environment
  - Date
  - Weather
  - Day of Week
- Associated Activity
  - Vehicle/Lodging
  - Talked to Ranger
  - Pets
  - Special Equipment
  - Length of Activity
  - Program Type

GUIDED ACTIVITIES

- Social Aggregate
  - Social Age
  - Race
  - Residence
- Social Group
  - Group Type
  - Total Number in Group
- Time/Environment
  - Date
  - Weather
  - Time of Day
  - Day of Week
- Place
  - Site

TABLE 1 (CONTINUED)
STUDY VARIABLES BY INTERPRETIVE ACTIVITY

GUIDED ACTIVITIES (CONTINUED)

Associated Activity
    Vehicle/Lodging
    Talked to Ranger
    Pets
Special Equipment
Type of Activity
Length of Activity

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the Blue Ridge Parkway in North Carolina were sampled. Therefore, findings may be difficult to generalize for other geographical sites and parks.

Second, this study was conducted over the summer months. Past research has shown that visitation patterns for recreational sites vary significantly between seasons (Wagar, 1972). Thus, the findings of this study conducted on the Blue Ridge Parkway are only applicable for summer visitors as opposed to winter visitors.

Finally, measurement errors may have affected the data collected through unobtrusive observations. The estimates of the ages of individuals might have been a source of measurement error. To control for additional complications, care was taken to accurately notice and record all information pertaining to each observation unit at the time it was observed.

Summary

The research design for this study was descriptive-correlational which involved accumulating descriptive data about participation in interpretive activities and explaining that data based on three research hypotheses. Six separate activities were studied on the Blue Ridge Parkway during the summer of 1979.

One data set was gathered on-site through various unobtrusive observation measures. A systematic sampling procedure was followed to ensure random selection. Information from the data set included social aggregate, social group, time/environment, place and associated activity characteristics.

Results from the observations were summarized and tabulated by SPSS. Data were analyzed using frequency measures, chi-square test of independence and gamma, a measure of association. The analyses were in the form of the test of three statistical hypotheses.

CHAPTER IV

RESULTS

The results of the data analysis and the test of the hypotheses are reported in this chapter. Two major sections are included in the results: first, the data set is described and presented in tabular form, and second, the findings of each test of null hypothesis are reported.

Description of Data Set

In this section the Blue Ridge Parkway data set, consisting of 547 sampled and recorded interpretive activities -- taking self-guided walks, reading roadside exhibits, viewing visitor center exhibits, stopping at a visitor center, attending evening programs and pariticpating in guided activities -- is described separately. Information concerning social aggregate, social group, time/environment, place and associated activity varibales is reported. All data are utilized for hypothesis testing. Since all data for testing are closed-ended choices, no effects should arise due to subjective coding.

Self-Guided Walks

The sample for self-guided walks consisted of 63 observation units. All of the observation units were collected at the same site -- Richland Balsam Self-Guided Trail on Richland Balsam Mountain. This loop trail, which passes through a spruce-fir forest similar to the Canadian coniferous forests, originates from a strategically located picturesque roadside overlook on the Blue Ridge Parkway approximately 41 miles south of Asheville, North Carolina. (See Figures 1, page 26.)

Of the visitors, participants were differentiated from nonparticipants based on whether or not they walked the self-guided trail. Observations were gathered in one-hour blocks of time consisting of individual observation units, drive-bys and total extensity. For the individual observations, the overall composition -- participants, nonparticipants -- is shown in Table 2. Additional tables with social aggregate and social group characteristics, as well as time/environment, place and associated activity data for the entire sample are located in Apprendix B.

TABLE 2

COMPOSITION OF SELF-GUIDED WALKS ACTIVITY SAMPLE

CATEGORY	N	% OF TOTAL
Participants	29	46.0
Nonparticipants	34	54.0
TOTAL	63	100.00

Observed social aggregate and social group data (Table 29, Appendix B) revealed that 61 percent of the visitors were between the ages of 25 and 65; all were Caucasian. Out-of-state residents constituted the majority of the sample with nearly 76 percent, as opposed to the 24 percent in-state residents. Approximately 90 percent stopped at the site in groups of two to four. Solitary visitors accounted for 4.8 percent of the sampled visitors, while immediate family groups were the predominate group type observed, comprising 70 percent of the visitors.

Specific time/environment and place data (Table 21, Appendix B) show that the majority of the observations were made on sunny (54 percent) weekdays (75 percent) during the afternoon hours (53 percent). Thirty-seven percent were made in July, 25 percent in August and 29 percent in June. Of the visitors observed, 64 percent had direct access to the site, while 36 percent had indirect access.

Various associated activity data (Table 22, Appendix B) show that approximately 72 percent spent the night in fixed lodging. Vans and pickup campers were the second most frequently observed vehicle/lodging type with 13 percent. Talking to a ranger was noted in 16 percent of the sample. Three percent of the visitors were accompanied by pets. Most visitors did not carry special equipment, except for 24 percent who had cameras and binoculars.

The 34 (54 percent) nonparticipants did not walk the trail. Of the 29 participants, 16 percent spent 30 minutes to an hour on the trail, while 22 percent remained on it for over an hour. An estimated walking time of 45 minutes was posted on a sign at the trail head. Fifty-nine percent of the visitors read the sign first, and then decided whether or not to participate by walking the trail. Another 14 percent of the nonparticipants remained in their vehicles and either drove through the overlook, stopped to let other automobiles pass or turned around to head in the direction they had previously been driving.

Additional data describing drive-bys are shown in Table 3. This information focuses on the park visitors who drove by the self-guided walk interpretive activity site without stopping. A total sample of 85 was observed. Out-of-state were most prevalent making up 72 percent of the sample. Possible access, either direct or indirect, was relatively equal for all drive-bys. Nearly half were in groups of two individuals. Seventy-two percent appeared to rely on fixed lodging, followed by vans and pickup campers (9.4 percent of the sample).

TABLE 3

DATA DESCRIBING DRIVE-BYS
FOR SELF-GUIDED WALKS ACTIVITY (n=85)

VARIABLE	OBSERVATION CATEGORY	N	%
Residence	In-state	24	28.2
	Out-of-state	61	71.8
Access	Direct	41	48.0
	Indirect	44	52.0
Total Number in Group	1	8	9.4
	2	42	49.4
	3	14	16.5
	4	13	15.3
	5	4	4.7
	6	3	3.5
	7	0	0.0
	8 or more	1	1.2
Vehicle/Lodging	Self-propelled motor home	1	1.2
	Hard top trailer	3	3.5
	Van, pickup camper	8	9.4
	Collapsible trailer	6	7.1
	Tent Camper	3	3.5
	Fixed lodging	61	71.8

By counting the total number of visitors stopping and passing the self-guided walk interpretive activity site, the extensity of participation was computed (Table 4). Approximately 13 percent of all park visitors stopped. Most were observed stopping on sunny (51 percent) weekend (51 percent) mornings (53 percent) with the highest numbers recorded for August (53 percent).

TABLE 4

EXTENSITY OF PARTICIPATION AND RELATED TIME/ENVIRONMENT VARIABLES FOR SELF-GUIDED WALKS ACTIVITY (n=408)

CATEGORY		N	%
Extensity of Participation			
Total Number Visitors Stopping		51	12.5
Total Number Visitors Passing		357	87.5
Time/Environment Variables			
Date	June	45	11.0
	July	148	36.3
	August	215	52.7
Time of Day	Morning	215	52.7
	Afternoon	193	47.3
Weather	Sunny	209	51.2
	Overcast/Foggy	160	39.2
	Inclement	39	9.6
Day of Week	Weekend	209	51.2
	Weekday	199	48.8

Roadside Exhibits

The roadside exhibits interpretive activity sample included 97 observation units. Participation in the interpretive activity was determined when at least one member of the observation unit read the interpretive exhibit. Nonparticipants were identified as those who stopped at the overlook, but did not read the exhibit. Observation of these participants and nonparticipants were made during one-hour time spans consisting of observation units, drive-bys and total extensity. Table 5 shows the overall division between participants and nonparticipants. Equal numbers of both were observed for the sample. Tables with social aggregate and social group characteristics, time/environment and place variables and associated activity data for the roadside exhibits interpretive activity are found in Appendix B.

TABLE 5

COMPOSITION OF ROADSIDE EXHIBITS ACTIVITY SAMPLE

CATEGORY	N	% OF TOTAL
Participants	48	50.0
Nonparticipants	48	50.0
TOTAL	96	100.0

Data pertaining to social aggregate and social group characteristics are shown in Table 23, Appendix B. The majority of the visitors, 61 percent, were between the ages of 25 and 65. A single observation unit consisted of Blacks; all others were Caucasians. Seventy-one percent of the sample were out-of-state residents, compared to the 29 percent in-state residents. Greater than 85 percent entered the roadside overlook in groups of two to four. In the entire sample, 5.2 percent were alone, whereas 71 percent were in immediate family groups, the dominant group type observed.

Displayed in Table 24, Appendix B, are the time/environment and place variables. The total number of observations increased throughout the study periods, June, July and August, from 24 percent to 34 percent to 42 percent, respectively. Over half were collected on sunny (52 percent) weekday (69 percent) mornings (58 percent). Although seven different overlooks served as study sites, 87 percent of the observations were gathered from four locations: Looking Glass Rock, Bear Trap Gap, American Chestnuts and French Broad River.

(See Figure 1, page 26.) In the total sample, the access for 55 percent was indirect and direct for 45 percent.

The distribution of associated activity characteristics for roadside exhibits is found in Table 25, Appendix B. Most of the observed visitors (67 percent) were housed in fixed lodging. An additional 20 percent drove vans and pick-up campers. Few of the visitors spoke with rangers. Two percent traveled with their pets and less than 29 percent carried special equipment, with cameras and binoculars accounting for the majority of this equipment.

Nearly all of the visitors, 95 percent, remained at the site less than 15 minutes. Approximately 87 percent of the observations were gathered when one to two groups were at the site at the same time. Slightly greater than half of the observations, 56 percent, occurred at sites with signboard exhibits, while 44 percent involved lift-top ones. For those visitors participating in the activity, parents read the exhibit 33 percent of the time, but only 12 percent read aloud. Most participants, 86 percent, read silently for less than one minute. In addition to reading the exhibit, 44 percent of the visitors spent time viewing and photographing the scenery.

Drive-bys for roadside exhibits were observed from a sample of 145. Table 6 shows that 60 percent had indirect access to the site. Seventy-three percent of the sample depended on fixed lodging, with an additional 11 percent in vans and pick-up campers. Out-of-state residents comprised about 60 percent of the sample and were frequently in groups of two (56 percent). Of the sites that were sampled, 40 percent had lift-top exhibits while the other 60 percent had signboards.

TABLE 6

DATA DESCRIBING DRIVE-BYS FOR ROADSIDE EXHIBITS ACTIVITY (n=145)

VARIABLE	OBSERVATION CATEGORY	N	%
Residence	In-state	59	40.7
	Out-of-state	86	59.3
Access	Direct	58	40.0
	Indirect	87	60.0
Total Number in Group	1	19	13.1
	2	81	55.9
	3	16	11.0
	4	17	11.7
	5	7	4.8
	6	4	2.8
	7	1	0.7
	8 or more	0	0.0
Vehichle/Lodging	Self-propelled motor home	2	1.4
	Hard top trailer	3	2.1
	Van, pickup camper	16	11.0
	Collapsible trailer	4	2.8
	Tent camper	1	0.7
	Fixed lodging	106	73.1
	Motorcylce	13	8.9
	Not available	0	0.0
Exhibit Type	Signboard	87	60.0
	Lift	58	40.0

The extensity of participation for roadside exhibits was 14.5 percent of the total visitor population (Table 7). Most extensity observations were gathered on sunny (53 percent) weekend (52 percent) afternoons (54 percent) in August (61 percent). Roadside overlooks with signboard exhibits and panoramic views served as the primary setting for these observations.

TABLE 7

EXTENSITY OF PARTICIPATION AND RELATED TIME/ENVIRONMENT VARIABLES FOR ROADSIDE EXHIBITS ACTIVITY SAMPLE (n=929)

CATEGORY		N	%
Extensity of Participation			
Total Number Visitors Stopping		135	14.5
Total Number Visitors Passing		794	85.5
Time/Environment Variables			
Date	June	111	12.0
	July	254	27.3
	August	564	60.7
Time of Day	Morning	424	45.6
	Afternoon	505	54.4
Weather	Sunny	490	52.7
	Overcast/Foggy	311	33.5
	Inclement	128	13.8
Day of Week	Weekend	487	52.4
	Weekday	442	47.6

Visitor Center Exhibits

Information was collected from 106 observation units at Craggy Gardens Visitor Center (CGVC). This site, positioned in a scenic gap within the Great Craggy Mountains, is located appoximately 18 miles north of Asheville, North Carolina. (See Figure 1, page 26.) A random sample of observation units was taken from the total number entering CGVC. Participants were distinguished from nonparticipants based on who viewed the centers exhibits and who did not. Observations of these visitors were collected during one-hour blocks of time which included observation units and total extensity. The overall composition of the sample reveals that the majority of the visitors, 89 percent, did participate in the interpretive activity by viewing the visitor center exhibits (Table 8). Tables with data pertaining to social aggregate and social group characteristics, time/environment variables and associated activity characteristics for this interpretive activity are located in Appendix B.

TABLE 8
COMPOSITION OF VISITOR CENTER EXHIBITS
ACTIVITY SAMPLE

CATEGORY	N	% OF TOTAL
Participants	94	88.7
Nonparticipants	12	11.3
TOTAL	106	100.0

Table 26, Appendix B, presents the specific social aggregate and social group characteristics for the visitor center exhibits sample. The visitors were predominantly between the ages of 25 and 65. Orientals and Blacks accounted for 5.6 percent of the sample, while the majority, 93 percent, was Causasian. One mixed racial group was observed. Sixty percent entered the visitor center in immediate family groups. Other group types -- family and friend(s), immediate family and other relatives, and alone or solitary -- contributed 11.3 percent, 10.4 percent, and 9.4 percent, respectively, to the total sample. Groups with two to four members, 83 percent, were the most prevalent sizes.

The distribution of time/environment variables is in Table

27, Appendix B. Over half of the observations were made on overcast/foggy days, with greater than 60 percent taken on weekend afternoons. Forty-one percent of the observations were gathered in July at CGVC, while 34 percent were gathered in August and 26 percent in June.

Shown in Table 28, Appendix B, are the associated activity characteristics for viewing visitor center exhibits. Limited information was available that pertained to vehicle/lodging types. Most visitors, 98 percent, did not have pets. Special equipment was not commonly observed except for cameras and binoculars which 21 percent of the visitors possessed. Of the 11 possible exhibits, two to six were viewed by 71 percent of the visitors. Sixty-five percent devoted one to five minutes for reading these exhibits. Greater than half of the groups discussed the exhibits with each other, 10 percent interacted with other visitors and 31 percent displayed no social interaction.

After entering the center, 44 percent of the visitors followed a left to right flow pattern, while 31 percent moved from right to left. One-fourth wandered inconsistently throughout the center. Five to 15 minutes was the amount of time most visitors remained within CGVC. In addition to viewing the exhibits, visitors either talked to the ranger/interpreter, read the park brochure, purchased materials or performed a combination of these associated activities.

The extensity of participation for viewing visitor center exhibits and related activities is recorded in Table 9. Exhibit viewing was displayed by 82.4 percent of the visitor population, talking to a ranger/interpreter by 35.4 percent of the population and purchasing materials by an additional 10.9 percent. Nearly 37 percent of these observations were made in July on overcast/foggy (58 percent) weekend (56.9 percent) afternoons (77.7 percent).

TABLE 9
EXTENSITY OF PARTICIPATION AND RELATED TIME/ENVIRONMENT VARIABLES FOR VISITOR CENTER EXHIBITS ACTIVITY (n=494)

CATEGORY		N	%
Extensity of Participation			
Total Number Visitors Viewing Exhibits		407	82.4
Total Number Visitors Talking To Ranger		175	35.4
Total Number Visitors Purchasing Materials		54	10.9
Time/Environment Variables			
Date	June	137	27.7
	July	182	36.9
	August	175	35.4
Time of Day	Morning	110	22.3
	Afternoon	384	77.7
Weather	Sunny	0	0.0
	Overcast/Foggy	288	58.3
	Inclement	206	41.7
Day of Week	Weekend	281	56.9
	Weekday	213	43.1

Visitor Center Stopping

The sample of 81 observation units was collected for the interpretive activity of stopping at a visitor center. Craggy Gardens Visitor Center served as the research setting (Figure 1, page 26). Observation units and total extensity were gathered during one-hour blocks of time. The observation units that stopped at CGVC were categorized as participants, while those that did not stop were nonparticipants and 46 percent did not participate (Table 10). Additional tables are located in Appendix B that describe the social aggregate and social group characteristics, time/environment and place variables and associated activity data for this interpretive activity.

TABLE 10

COMPOSITION OF VISITOR CENTER STOPPING ACTIVITY SAMPLE

CATEGORY	N	% OF TOTAL
Participants	44	54.3
Nonparticipants	37	45.7
TOTAL	81	100.0

For this interpretive activity, stopping at a visitor center, the majority of the visitors were above age 25 (83 percent). (See Table 29 Appendix B.) Of those sampled, nearly 99 percent were Caucasian. Out-of-state visitors constituted 57 percent of the sample, as opposed to the 43 percent in-state residents. Immediate family groups were the most prevalent group type with 62 percent of the total. Two members per group predominated the group size with 46 percent. An additional one-third of the visitors were observed in groups of three to four.

The time/environment and place variables influencing the observations are shown in Table 30, Appendix B. Most of the visitors were sampled in July and August (41 percent and 38 percent, respectively), while 21 percent were observed in June. Weekday (56 percent) afternoons (53 percent) set the stage for most of the observations collected on overcast/foggy days (42 percent) at CGVC. Of the sample, 57 percent had indirect access to the site, whereas the other 42 percent had direct access.

Several associated activity variables that were noted at the site are shown in Table 31, Appendix B. The type of observed vehicle/lodging indicated that the majority of the sample, about 78 percent, spent the night in fixed dwellings. Most visitors (69 percent) did not converse with the ranger and none had pets. Approximately 83 percent did not possess special equipment, with the exception of 15 percent of the sample that carried cameras or binoculars.

Just over half of the visitors spent less than 15 minutes at the site. Of the 44 participants (n=81), 31 percent did a comination of site-related activities, which included using restroom facilities, walking the self-guided trail, entering the visitor center and photographing the scenery.

The extensity of the visitor population stopping at the visitor center was 50.9 percent (Table 11). Of the total observations, most were collected on sunny (57.6 percent) weekday (50.6 percent) afternoons (60.7 percent) with the greatest number recorded in August (76 percent).

TABLE 11

EXTENSITY OF PARTICIPATION AND RELATED TIME/ENVIRONMENT VARIABLES FOR VISITOR CENTER STOPPING ACTIVITY

(n=557)

CATEGORY		N	%
Extensity of Participation			
Total Number Visitors Passing		273	49.1
Total Number Visitors Stopping		284	50.9
Time/Environment Variables			
Date	June	0	0.0
	July	132	23.7
	August	425	76.3
Time of Day	Morning	219	39.3
	Afternoon	338	60.7

TABLE 11 (CONTINUED)
EXTENSITY OF PARTICIPATION AND RELATED TIME/ENVIRONMENT VARIABLES FOR VISITOR CENTER STOPPING ACITIVY (n=557)

Time/Environment Variables (cont.)			
Weather	Sunny	321	57.6
	Overcast/Foggy	104	18.7
	Inclement	132	32.7
Day of Week	Weekend	275	49.4
	Weekday	282	50.6

Evening Programs

Evening programs included a sample of 101 observation units. Participants were observed as they came to the program, and nonparticipants, those not attending the program and remaining in their campsites, were randomly sampled. Table 12 shows the overall composition of 52.5 percent nonparticipants and 47.5 percent participants. Additional tables featuring social aggregate and social group characteristics, time/environment and place variables and associated activity characteristics are found in Appendix B.

TABLE 12
COMPOSITION OF EVENING PROGRAM ACTIVITY SAMPLE

CATEGORY	N	% OF TOTAL
Participants	48	47.5
Nonparticipants	53	52.5
TOTAL	101	100.0

All of the observed visitors were Caucasian, with over half between the ages of 25 and 65. (See Table 32, Appendix B). Three-quarters of the nonparticipants were from out-of-state. Residential information for participants was not available through observations. Immediate family groups comprised about 69 percent of the sampled group types. Just over half of these groups were composed of two members.

Shown in Table 33, Appendix B, are the values for the time/environment and place variables observed for the evening program activity. Most programs, 64 percent, were conducted indoors within the confines of the Old Pisgah Inn. The remaining 36 percent took place outside at the campfire circle for the Mt. Pisgah Campground, located approximately 26 miles south of Asheville, North Carolina. (See Figure 1, page 26.) Fifty-six percent of the observations were made on weekends with either overcast/foggy (49 percent) or sunny (41 percent) weather conditions. Nearly 45 percent were taken in July, 37 percent in August and 18 percent in June.

The distribution of associated activity characteristics for evening programs is in Table 34, Appendix B. Although unavailable for participants, the most common vehicle/lodging type for nonparticipants was vans/pickup campers (15 percent), followed by tents (14 percent). The majority of the visitors, 84 percent, did not talk to the ranger. Pets were uncommon; nine groups had dogs and one had cats. Over 83 percent of the observed visitors did not have special equipment. Eleven percent did carry and use activity-related items, such as lanterns, ponchos and lounge chairs. The programs generally lasted from 30 minutes to one hour in length. Nearly equal numbers of campfire talks and slide/movie presentations were sampled. Special music programs accounted for an additional 10 percent of the total observed evening programs.

Guided Activities

The guided activities sample included 99 observation units. Participants were observed, either before or during the activity, as they took part in this interpretive event. Nonparticipants, those who did not join in, were sampled at locations other than the activity site. Table 13, with the overall composition, shows that 65 percent of the sample participated while 35 percent did not participate. Appendix B contains additional tables that display social aggregate and social group characteristics, time/environment variables and associated activity characteristics for the guided activities sample.

TABLE 13

COMPOSITION OF GUIDED ACTIVITES SAMPLE

CATEGORY	N	% OF TOTAL
Participants	64	64.6
Nonparticipants	35	35.4
TOTAL	99	100.0

Social aggregate and social group characteristics are found in Table 35, Appendix B. For this activity 57 percent of the observed visitors varied in age from 25 to 65. All were Caucasian. Of those sampled, 92 percent resided out-of-state. Immediate family groups predominated in the sample making up nearly 62 percent. Lone visitors accounted for an additional 18 percent. The number of visitors in most groups ranged from one to four, with two being the mode.

Table 36, Appendix B, lists the descriptive information focused on time/environment variables. All of the observations were made at the Mt. Pisgah Campground area (Figure 1, page 26), with approximately 92 percent taking place in the afternoon. Infrequent morning activities accounted for the remaining 8 percent. The number of observations increased throughout the study periods. Ten percent were recorded in June, 37 percent in July and 53 percent in August. The majority of the observations, 84 percent, were collected on weekdays when the weather conditons were either sunny or overcast/foggy.

Associated activity characteristics (Table 37, Appendix B) revealed that the most commonly observed vehicle/lodging type was hard top trailers, making up 22 percent of the sample. Tents were the next most frequent type of lodging, making up 15 percent of the sample. Thirty percent of the vehicle/lodging information was unavailable for analysis. A 61 percent majority conversed with the ranger. Eight percent of the sample had dogs, while the rest had no pets. Special equipment, except for cameras and binoculars (13 percent), was infrequently observed.

Of the eight guided activities, 32 percent of the observations were recorded for the craft-oriented "Leaf Prints," followed by 16 percent in the sedentary "No Utensils Please" and 12 percent for the stream-based "Toe Cooler". Sixty-one percent of all the activities lasted from 30 minutes to one hour. Twenty-four percent took more time and 15 percent took less.

Test of Hypothesis

Hypothesis 1

The hypothesis test leading to the decision to reject or fail to reject the proposition is presented. The following tested hypothesis is stated in the null form.

> Hypothesis 1: There is no significant difference between the number of participants and nonparticipants in the interpretive activities observed.

Results

The null hypothesis was rejected. Rejection demonstrates that the number of participants and nonparticipants is significantly different for the interpretive activities observed.

Of the six interpretive activities observed on the Blue Ridge Parkway, data from the four nonpersonal activities -- self-guided walks, roadside exhibits, visitor center exhibits and visitor center stopping -- were utilized to test null Hypothesis 1. For the nonpersonal activities, park visitors were sampled as they individually arrived at the observation sites, permitting a natural occurrence of participants and nonparticipants to be observed. Due to the nature of personal activities, evening programs and guided activities were excluded from the hypothesis test. Sampling for the personal activities which were designed for group participation, was controlled by the observer. Relatively equal numbers of participants and nonparticipants at nonpersonal activities was appropriate for testing of null Hypothesis 1.

Null Hypothesis 1 states that the number of participants does not differ significantly from the number of nonparticipants in the four nonpersonal interpretive activities. To test the null hypothesis, a 2 x 4 contingency table cross-tabulated the nonpersonal activities with the participant/nonparticipant variable. A Chi-square test was computed to determine if there was a significant difference between the two categories (Table 14). Since the resulting chi-square value of 46.83 was greater than the critical value of 7.81, the number of participants and nonparticipants were determined to be significantly different. By comparing the expected frequencies with the observed frequencies and by analysing the individual cell values for each activity, the significance of the total chi-square value was verified. The account of the hypothesis test that follows focuses on the results shown in Table 14.

TABLE 14

TEST OF NULL HYPOTHESIS 1: NUMBERS OF PARTICIPANTS/ NONPARTICIPANTS ARE INDEPENDENT OF INTERPRETIVE ACTIVITIES

ACTIVITY	PARTICIPANTS		NONPARTICIPANTS	
	Observed	Expected	Observed	Expected
Self-Guided Walks	29	39.2	34	23.8
Roadside Exhibits	48	59.7	48	36.3
Visitor Center Exhibits	94	65.9	12	40.1
Visitor Center Stopping	44	50.3	37	30.7

X^2 = 46.83 with 3 degrees of freedom   Rejected

More participants were expected than were actually observed on self-guided walks and at roadside exhibits. In contrast, more nonparticipants were observed at these activities than were expected. Both nonpersonal interpretive activities resulted in significant differences. Thus, each activity made significant contributions to the total chi-square value. The individual cells for self-guided walks supplied 2.65 and 4.37 for participants and nonparticipants, respectively. In roadside exhibits, the chi-square values for the participant's cell equalled 2.29, while the nonparticipant's cell equalled 3.77.

Major contributions to the total chi-square value were made by the nonpersonal interpretive activity of viewing visitor center exhibits. Table 14 shows that observed participants significantly outnumbered observed nonparticipants. Significant differences between the observed and expected results contributed 11.98 for the participant's cell and 19.69 for the nonparticipant's cell to the total chi-square value.

The fourth nonpersonal interpretive activity, stopping at a visitor center, added the least to the total chi-square value. As with self-guided walks and roadside exhibits, more participants were expected than were actually observed, while nonparticipants revealed opposite results. The difference between the expected and observed results was even less significant for stopping at a visitor center. This activity contributed a chi-square value of .79 and one of 1.29 for participants and nonparticipants, respectively. Since the total chi-square statistic indicated that there was a significant difference between the number of participants and nonparticipants, the null hypothesis was rejected.

Hypothesis 2

The hypothesis test leading to the decision to reject or not reject the proposition is presented. The tested hypothesis is stated in the following null form:

> Hypothesis 2: No significant difference exists in the rank order of participation in selected interpretive activities during the study periods of June, July and August.

Results

The null hypothesis was not rejected. Failure to reject demonstrates that participation for all six interpretive activities does not differ significantly during the three month study period. Table 15 provides the data from the extension of the median test with the computed chi-square statistic, degrees of freedom and result of the hypothesis test for null Hypothesis 2. For the appropriate level of significance, the chi-square number with two degrees of freedom must be above the critical value 5.99. Since the chi-square value of 5.32 for the extension of the median test was below the required significance level, the difference in participation within the activities during the three study periods was not considered to be significant.

TABLE 15

TEST OF NULL HYPOTHESIS 2: RANK ORDER OF PARTICIPATION IS INDEPENDENT OF STUDY PERIODS

RELATION TO MEDIAN (15)	JUNE		JULY		AUGUST	
	(O)	(E)	(O)	(E)	(O)	(E)
Number of Activities with Participation above Median	1	3	5	3	3	3
Number of Activities with Participation below Median	5	3	1	3	3	3

$X^2 = 5.32$ with 2 degrees of freedom Not Rejected

An analysis of the six individual cells for this test revealed that the two cells in June and the two for July each contributed 1.33 to the total chi-square score. Neither of the August cells supplied values to the total score. Due to the small sample size in the extension of the median test (n=18), the chi-square assumption relating to cell size was violated. However, trends in participation remained evident. From the observed numbers, most activities had greater participation than the common median in July (five out of six), lesser than the median in June and equal rates in August.

A cross-tabulation of the actual participation values for the six activities with the three study periods revealed additional evidence of the relationship (Table 16). Although the chi-square statistic of 12.24 was below the critical value 19.31 with 10 degrees of freedom, an analysis of the individual cells supplied pertinent information. Three of the 18 total cells made major contributions to the total chi-square number. Evening programs supplied 1.84 points for August, while guided activities added 2.13 for June and 3.65 for August. The remaining 15 cells ranged in chi-square values from .0003 to .87 with an average value of .308.

TABLE 16

TEST OF NULL HYPOTHESIS 2: PARTICIPATION IN INTERPRETIVE ACTIVITIES IS INDEPENDENT OF STUDY PERIODS

ACTIVITY	JUNE	JULY	AUGUST
Self-Guided Walks	7	13	9
Evening Programs	15	21	12
Guided Activities	10	21	33
Visitor Center Stopping	13	17	14
Visitor Center Exhibits	26	36	32
Roadside Exhibits	10	17	21

X^2 = 12.24 with 10 degrees of freedom   Not Rejected

By rank ordering the six activities with regard to total number of participants for each of the three months, further information was obtained that supported the differences in the previously mentioned chi-square values and observed results. Table 17 displays the rank ordering of the activities from one to six, with one having the most participants and six having the least. In Table 17, evening programs and guided activities -- the personal interpretive activities -- both displayed a major change in participation. Participants decreased in numbers by three ranks from June to August for evening programs whereas guided activities underwent an increase in numbers (3.5 ranks) over the study periods. These changes account for the noted chi-square values that evening programs and guided activities contributed to the total chi-square score.

TABLE 17

RANK ORDERS FOR ACTIVITY PARTICIPATION DURING THREE MONTHS OF STUDY PERIODS

ACTIVITY	JUNE	JULY (difference)	AUGUST (tot. diff.)
Self-Guided Walks	6	6 (0)	6 (0)
Evening Programs	2	2.5(+.5)	5 (+3)
Guided Activities	4.5	2.5 (-2)	1 (-3.5)
Visitor Center Stopping	3	3.5(+.5)	4 (+1)
Visitor Center Exhibits	1	1 (0)	2 (+1)
Roadside Exhibits	4.5	3.5 (-1)	3 (-1.5)

For the nonpersonal activities, fewer changes occurred in the rank ordering of participation. Self-guided walks experienced no change, visitor center exhibits and visitor center stopping showed slight decreases and roadside exhibits indicated a moderate increase.

Although these changes in rank are noted, they are not significant. As a result, the null hypothesis was not rejected. Participation in the interpretive activities was considered to be independent of the study periods since no major difference was evident over the summer months on the Blue Ridge Parkway.

Hypothesis 3

The hypothesis test leading to the decision to reject or fail to reject the proposition is presented. Hypothesis 3, stated in the null form for testing follows:

> Hypothesis 3: A significant relationship does not exist between participation/nonparticipation and any particular social aggregate,social group, time/environment, place or associated activity variable.

Results

The null hypothesis was rejected. Rejection demonstrates that participants and nonparticipants are significantly different with regard to particular study variables observed for particular interpretive activities. Table 18 provides a summary of the test of null Hypothesis 3.

TABLE 18

SUMMARY OF TEST OF NULL HYPOTHESIS 3: PARTICIPATION IN INTERPRETIVE ACTIVITIES IS INDEPENDENT OF STUDY VARIABLES

STUDY VARIABLES	SGW	RD-EX	VC-EX	VC-STOP	EVE PROG	GUIDED ACTS
Social Aggregate						
Social Age	**	--	--	**	--	--
Race	--	--	**	--	--	--
Residence	--	--	--	--	--	--
Social Group						
Group Type	--	--	**	--	--	--
Total Number in Group	--	--	**	--	--	--
Time/Environment						
Weather	--	--	--	--	**	**
Time of Day	--	--	--	--	--	--
Day of Week	--	--	--	--	--	--
Place						
Site	--	--	--	--	--	--
Access	--	--	--	**	--	--
Associated Activity						
Vehicle/Lodg.	--	--	--	--	**	**
Talked to Ranger	**	--	--	**	**	**
Pets	--	--	--	--	--	--
Special Equipment	**	--	--	**	**	--
Amount of Time on Trail	**	--	--	--	--	--
Other Acts.	**	**	--	**	--	--
Exhibit Type	--	--	--	--	--	--
Who Read Aloud	--	**	--	--	--	--
Length of Activity	--	--	**	**	**	**
Reading Time	--	**	**	--	--	--
Social Interaction	--	--	**	--	--	--
Flow Pattern	--	--	**	--	--	--
Exhibits Read	--	--	**	--	--	--
Program Type	--	--	--	--	--	--
Activity Type	--	--	--	--	--	**
Number of Groups/Site	--	--	--	--	--	--

**indicates relationship

Visitor observations were gathered at six interpretive activities along the southern section of the Blue Ridge Parkway. These activities, each one constituting a separate sub-hypothesis, included: taking self-guided walks, viewing roadside exhibits, viewing visitor center exhibits, stopping at a visitor center, attending evening programs and participating in guided activities. For each activity, data were compiled describing participants and nonparticipants according to to the following study variables: social aggregate, social group, time/environment, place and associated activities. The resulting information was utilized for the testing of null Hypothesis 3.

Null Hypothesis 3 specifies that participants and nonparticipants are not significantly different in each of the interpretive activities in terms of particular study variables. In the six null sub-hypotheses, a chi-square test of independence was calculated for each study variable as it related to participants and nonparticipants. Gamma scores were also computed to determine the existence and degree of any significant associations among the noted variables.

The results of the chi-square test of independence allowed for the rejection of null Hypothesis 3 due to varying numbers of significant study variables in each sub-hypothesis. Significant differences between participants and nonparticipants for sub-hypothesis 3A (Self-Guided Walks) were the study variables social age, talked to ranger, special equipment, amount of time on trail and other activities at the site. For Roadside Exhibits (sub-hypothesis 3B), who read aloud, reading time and other activities at the site were all significant. The eight variables with marked significance for Visitor Center Exhibits (sub-hypothesis 3C) included the following: race, group type, total number in group, number of exhibits read, exhibits reading time, social interaction, flow pattern and length of activity. Sub-hypothesis 3D (Visitor Center Stopping) found the study variables social age, access, talked to ranger, special equipment, length of activity and other activities at the site significant. The five study variables for Evening Programs (sub-hypothesis 3E) that were significant consisted of weather, vehicle/lodging, talked to ranger, special equipment and length of activity. The final sub-hypothesis (3F - Guided Activities) revealed significant differences between participants and nonparticipants in the following study variables: weather, vehicle/lodging, talked to ranger, activity type and length of activity.

Each of the aforementioned characteristics (study variables) differentiated participants from nonparticipants for the specific interpretive activity noted. A discussion of the test of each of the six null sub-hypotheses follows.

Self-Guided Walks (sub-hypothesis 3A): Participants and nonparticipants differed significantly at the self-guided walk interpretive activity in terms of the social aggregate variable social age and the associated activity variables talked to ranger and special equipment. Although two additional associated activity variables -- amount of time on trail and other activites at the site -- were significant between participants and nonparticipants, the chi-square assumption with regard to cell size was violated when significance was determined. Table 38, Appendix C, displays the distributions of and the chi-square value for each variable.

Social age of the observed visitor revealed a significant difference when participants and nonparticipants were compared. Participants displayed a greater numbers in the under 6 and 6-12 age categories, whereas nonparticipants were represented by more elderly visitors (51-65 and over 65). In addition to the fact that both age extremes were over and under represented numerically, an analysis of each individual cell from the contingency table disclosed that the two extreme age categories for participants and nonparticipants contributed over two-thirds of the total chi-square value for the cross-tabulation.

For the associated activity variables, talking to a ranger was found to be significant between participants and nonparticipants. A larger number of participants talked to a ranger, while most nonparticipants did not. Since the majority of the visitors did not talk to a ranger, however, the bulk of the chi-square value was attributed to those visitors who spoke to a ranger. The gamma score for this comparison, .87, was high, thus showing a significant positive relationship between the two variables. (Table 19 contains the list of gamma scores associated with all of the significant study variables utilized to test null Hypothesis 3.)

TABLE 19

GAMMA SCORES DEPICTING THE DEGREE AND DIRECTION OF ASSOCIATIONS BETWEEN SPECIFIC INTERPRETIVE ACTIVITIES AND SIGNIFICANT STUDY VARIABLES

STUDY VARIABLES	SGW	RD-EX	VC-EX	VC-STOP	EVE PROG	GUIDED ACTS
Social Aggregate						
Social Age	.37	--	--	-.55	--	--
Race	--	--	.58	--	--	--
Residence	--	--	--	--	--	--
Social Group						
Group Type	--	--	-.45	--	--	--
Total Number in Group	--	--	-.75	--	--	--

TABLE 19 (CONTINUED)
GAMMA SCORES DEPICTING THE DEGREE . . .

STUDY VARIABLES	SGW	RD-EX	VC-EX	VC-STOP	EVE PROG	GUIDED ACTS
Time/Environment						
Weather	--	--	--	--	.23	.17
Time of Day	--	--	--	--	--	--
Day of Week	--	--	--	--	--	--
Place						
Access	--	--	--	-.60	--	--
Site	--	--	--	--	--	--
Associated Activity						
Vehicle/Lodg.	--	--	--	--	**	-.49
Talked to Ranger	.87	--	--	**	.69	**
Pets	--	--	--	--	--	--
Special Equip.	-.61	--	--	**	-.75	--
Amount of Time on Trail	**	--	--	--	--	--
Other Acts.	-.64	-.39	--	**	--	--
Exhibit Type	--	--	--	--	--	--
Who Read Aloud	--	**	--	--	--	--
Length of Activity	--	--	**	**	.29	.62
Reading Time	--	**	**	--	--	--
Social Interaction	--	--	.33	--	--	--
Flow Pattern	--	--	.66	--	--	--
Exhibits Read	--	--	**	--	--	--
Program Type	--	--	--	--	--	--
Activity Type	--	--	--	--	--	.08
Number of Groups/Site	--	--	--	--	--	--

--gamma scores not computed
**invalid gamma score

The possession of special equipment at the self-guided walks activity was significant between participants and non-participants. Although participants were equally distributed among the two categories of equipment and no equipment, non-participants were skewed in the no equipment direction. Approximately two-thirds of the total chi-square value was supplied by the unequal distribution of nonparticipants. A high negative gamma score, -.61, confirmed this inverse relationship (Table 19).

Since taking the self-guided walk was the major criterion for differentiating between participants and nonparticipants, the amount of time on the trail variable resulted in a significant chi-square value. Although this value was significant, the basic assumption that requires expected frequencies of five or greater in each cell of the contingency table was violated. From the limited observed values, however, a relationship remained evident.

Another significant associated activity guided walks concerned the likelihood of participants and nonparticipant to engage in other activities at the site. Both groups tended to read the initial trail sign before they made further decisions. Participants read the sign, walked the trail and engaged in a combination of other activities. In contrast, nonparticipants, who did not participate by walking the trail. read the sign, viewed and/or photographed the scenery and did things associated with their automobiles, such as drive through the overlook, stop to let others pass, turn around or work on their cars. The inverse relationship between participants and nonparticipants and other activities engaged in at the site was apparent as shown by the negative gamma score (-.64), but not significantly different since the chi-square assumption of small cell size was violated.

Roadside Exhibits (sub-hypothesis 3B): Three study variables were found to reveal relationships between participants and nonparticipants at roadside exhibits. The associated activity variables who read aloud, reading time and other activities at the site are shown in Table 39, Appendix C. Although significant differences cannot be verified in these relationships since the chi-square cell size assumption was violated, specific trends are evident.

The associated activity variables reading time and who read aloud indicated similar relationships between participants and nonparticipants. Since both are directly related to actual participation, nonparticipants were skewed to the did not read and no one read aloud categories. Participants spent less than one minute reading the exhibit and did not read aloud, except for the few parents who read aloud to their children.

The third variable that disclosed a relationship between participants and nonparticipants involved other activities observed at the site. Nearly equal numbers of participants and nonparticipants viewed or photographed the scenery. An abundance of nonparticipants engaged in automobile related activities, while participants generally failed to perform any additional activities aside from viewing the exhibits. As with the other study variables in sub-hypothesis 3B, the chi-square assumption was violated. A definite relationship was prevalent, however, as revealed in the negative gamma score of moderate value (-.39) (Table 19, page 72).

Visitor Center Exhibits (sub-hypothesis 3C): Participants were differentiated from nonparticipants in the interpretive activity, viewing visitor center exhibits, with regard to eight study variables. These variables included race (social aggregate), group type and total number in group (social group) and number of exhibits read, exhibit reading time, social interaction, flow pattern and length of activity (associated activity).

(See Table 40, Appendix C.)

Racial differences between participants and nonparticipants were prominent for Blacks, Orientals and mixed racial couples. Caucasian visitors were well represented in both groups. Blacks and Orientals were few in numbers, three observation units a piece, but over represented as participants, while one mixed couple was observed as a nonparticipant. A gamma score of +.58 was computed for this marked association (Table 19, page 70), and the chi-square score was beyond the critical value that designates a relationship despite the fact that the chi-square expected frequency assumption was violated.

The social group variable, group type, revealed a noted difference between participants and nonparticipants in spite of the chi-square assumption which was violated. Participants were primarily with either their immediate family, their family and friend(s) or their family and other relatives. In contrast, nonparticipants were predominantly divided among solitary/single groups (alone), immediate family groups and groups of friends. A gamma score of -.45 was computed for group type.

The total number in a group was the other important social group variable. Nearly half of the participants were in medium-sized groups of three to four members with smaller groups of one to two also common. The majority of nonparticipants were observed in smaller groups of one to two members. The degree of this relationship was depicted by the gamma score of -.75 (Table 19, page 70). Two observations of nonparticipants were in larger groups, which contributed approximately 30 percent to the total chi-square value calculated from small cells that violated the related assumption.

While viewing the exhibits, visitors were provided with the opportunity to interact with others. The tendency to converse with other visitors varied between participants and nonparticipants. Most nonparticipants failed to interact at all, while two-thirds of the participants talked with other members of their social group.

As visitors entered the visitor center, their flow pattern varied between participants and nonparticipants. A left to right flow pattern around the center's interior was predominantly displayed by participants, closely followed by a right to left pattern. Nonparticipants, on the other hand, were inconsistent in their direction of flow, since they did not follow either of these patterns. They entered the center, asked questions and then left.

The length of the activity, i.e., the amount of time spent in the visitor center, was different among participants compared to nonparticipants. All nonparticipants stayed less than five minutes and only asked for information. In contrast, participants generally spent from five to 15 minutes within the visitor center viewing the exhibits and other related activities. The chi-square statistic equalled a significant value, but was computed in violation of the cell size assumption.

Similar differences in participation were characterized by the last two study variables, number of exhibits read and exhibit reading time. Participants viewed an average of two to six exhibits, while nonparticipants viewed none. Reading time for participants was from one to five minutes, as opposed to nonparticipants who did not read or view any exhibits. Since no observations were made for several of the categories, the chi-square assumption was violated.

Visitor Center Stopping (sub-hypothesis 3D): Six study variables were discovered through observations at the interpretive activity of stopping at a visitor center that differentiated participants from nonparticipants. These variables consisted of social age (social aggregate), access (place) and talked to a ranger, special equipment, length of activitty and other activities at the site (all four associated activity variables). Table 41, Appendix C, presents the test of null sub-hypothesis 3D through response data and related chi-square values.

Social age revealed a relationship between participants and nonparticipants. The 36-50 age category was over represented by nonparticipants and under represented by participants. Combined, this age bracket contributed 25 percent of the total chi-square value. A large elderly group caused the numbers of participants to be skewed toward the 51-65 and over 65 range. These ages were under represented by nonparticipants. An additional 57 percent of the total chi-square score can be attributed to both participants and nonparticipants for the older age groups. The degree and direction of this association was verified by the gamma score, -.55 (Table 19, page 70). The chi-square assumption concerning expected frequencies was violated for computing this variable, but a definite relationship remained evident between participants and nonparticipants.

A visitor's access to the visitor center site from the Blue Ridge Parkway, a place variable, was shown to significantly differentiate participants from nonparticipants in an inverse manner. Most participants had indirect access to the site, while nonparticipants had direct access. A gamma score of -.60 signified a high inverse relationship.

The associated activity, talking to a ranger, was significantly different between participants and nonparticipants. Over half of the participants, 57 percent talked to a ranger. None of the nonparticipants, on the other hand, talked to a ranger, since they did not initially stop at the site.

An inverse relationship between participants and nonparticipants was found with regard to the possession of special equipment. Most participants did not carry special equipment, except for one-third that had cameras, binoculars, etc. None of the nonparticipants were observed to possess special equipment, and thus, contributed approximately 45 percent of the total significant chi-square value.

Another important variable, in spite of a violated chi-square assumption, involved the amount of time the visitor spent at the visitor center, i.e., length of activity. Most participants stopped for less than 15 minutes. Nonparticipants did not stop at the visitor center, thus they were referred to as being nonspecific in their activity length.

The final variable that differentiated participants from nonparticipants related to the involvement in other activities at the site. Participants predominantly performed a combination of activities that included entering the visitor center, using the restroom facilities and photographing the scenery. Since nonparticipants did not stop at the visitor center, they were not observed engaging in any of the other activities. The expected frequency assumption for chi-square was violated, but a definite relationship remained apparent.

Evening Programs (sub-hypothesis 3E): The five following study variables were found to differentiate participants from nonparticipants at the interpretive activity of attending evening programs: weather, vehicle/lodging, talked to ranger, special equipment and length of activity. The distributions and chi-square values for the test of null sub-hypothesis 3E are provided in Table 42, Appendix C.

A time/environment variable, weather, revealed a significant decrease of participants and subsequent increase of nonparticipants for presentations during inclement conditions. Nearly equal numbers of both groups were observed during sunny or overcast/foggy conditions. Almost half of the the chi-square value, however, resulted from the lack of observed participants during inclement weather conditions.

When participants and nonparticipants were compared in terms of vehicle/lodging mode, a chi-square value resulted that was beyond the required critical value. A closer inspection of the observed frequencies showed that this information was predominantly unavailable for participants. Thus, the chi-square assumption of cell size was violated, and a significant difference between the two groups could not be explained in terms of vehicle/lodging mode. Interesting data describing nonparticipants' type of vehicle/lodging remained evident, however. Vans, pickup campers and tent campers were the most frequently observed types of accommodations, with hard top and collapsible trailers seen next.

Participants and nonparticipants were found to be significantly different in terms of the associated activity variable, talking to a ranger. Although most visitors did not speak with a ranger, more participants did talk as compared to nonparticipants. A high gamma score of +.69 supported this positive relationship (Table 19, page 70). Nearly all of the total chi-square value was attributed to the category of talking to a ranger with participants and nonparticipants contributing almost equal amounts. Expected frequencies are also fairly similar, but the differences exist between the observed values.

The possession of special equipment showed significant differences between participants and nonparticipants at evening programs. The majority of visitors in either group did not carry special equipment. For those who did possess special equipment, participants were more prevalent and they outnumbered nonparticipants approximately five to one. A significant inverse relationship was apparent from the gamma score of -.75 (Table 19, page 70).

The final associated activity variable that differentiated participants from nonparticipants at evening programs related to the actual length of the program. Almost identical numbers of the two groups were observed for programs that lasted from 30 minutes to an hour. As programs increased in length, the number of nonparticipants subsequently increased. The chi-square assumption regarding expected frequencies was violated for the length of the program variable. However, a marked difference was still evident between participants and nonparticipants.

Guided Activities (sub-hypothesis 3F): Participants and nonparticipants were differentiated from each other via seven study variables observed in the final interpretive activity -- participating in guided activities. These variables consisted of weather, (time/environment), vehicle/lodging, talked to ranger, activity type and length of activity (associted activity). Table 43, Appendix C, displays the distribution and associated chi-square values for each of the observed study variables utilized in the testing of null sub-hypothesis 3F.

Weather conditions revealed that nearly equal numbers of participants and nonparticipants were observed during overcast/foggy conditions. With sunny and inclement conditions, participants greatly outnumbered nonparticipants. This over and under representation of participants and nonparticipants was responsibile for the majority of the total chi-square value which was calculated in violation of the expected frequency cell size assumption.

The type of vehicle/lodging that was observed for visitors was similar between participants and nonparticipants except for a few instances. Participants were frequently seen in hard top trailers and fixed lodging, but less frequent in vans and pickup campers. Nonparticipants were opposite participants in frequency with regard to these modes of travel. For the participants, 42 percent of the information related to the vehicle/lodging type was not available. Thus, the chi-square assumption of cell size was violated. Noted differences were apparent between the vehicle/lodging types of participants and nonparticipants, although accurate assumptions could not be made.

More definite differences were shown related to the activity variable -- talked to ranger. Participants predominantly spoke with a ranger, whereas the majority of nonparticipants did not speak with one. The majority of the total chi-square statistic was attributed to the limited representation of both participants not talking and nonparticipants who spoke to a ranger. A significant difference resulted between participants and nonparticipants and the talked to a ranger variable.

The type of activity and its length also proved to differentiate participants from nonparticipants, in spite of the fact that the chi-square assumption of cell size was violated. If the eight types of activities were categorized into four broad types (art, campfire, hike and game), specific differences would be apparent. Leaf Prints, an art-related activity, accounted for over half of the total chi-square value as nonparticipants outnumbered participants two to one. Although participants over represented nonparticipants in the observed hike-related activities (Buck Springs, Nature Walk and Toe Cooler), equal chi-square values were contributed by both groups. Nonparticipants contributed greater chi-square values to the total than did participants in both active (New Games) and campfire-related activities (No Utencils Please, Grok a Tree and Backpack Idea Swap), despite an under representation of nonparticipants in both. The length of the activity revealed an abundance of participants in programs lasting from 15 minutes to one hour. As the programs continued beyond an hour, more nonparticipants were observed. A high gamma score of +.62 supported this direct association (Table 19, page 70).

Summary

The results of the data analysis and hypothesis testing were presented in this chapter. In the first section, the data set collected on the Blue Ridge Parkway was described according to the six observed interpretive activities: taking self-guided walks, reading roadside exhibits, viewing visitor center exhibits, stopping at a visitor center, attending evening programs and participating in guided activities. For each of the activities, the data were described in terms of the most frequent observations. These observations were categorized as social aggregate variables, social group variables, time/environment variables, place variables and associated activity variables.

To test null Hypothesis 1, a chi-square test of independence was utilized on the data concerning measures of participation for the four nonpersonal interpretive activities: taking self-guided walks, reading roadside exhibits, viewing visitor center exhibits and stopping at a visitor center. A significant difference between the number of participants and nonparticipants was indicated from the chi-square test statistic for the nonpersonal interpretive activities. Major contributions to the statistic came from the visitor center exhibits, self-guided walks and roadside exhibits. Thus, null Hypothesis 1 was rejected.

Null Hypothesis 2 was not rejected due to the results of an extension of the median test. No significant statistical difference was shown between the rates of participation at the six interpretive activities and the study periods of June, July and August. A rank ordering of the activities by monthly participation revealed a marked change in actual participation for personal interpretive activities, but little change occurred for nonpersonal activities.

Null Hypothesis 3 was rejected. Specific study variables were found to differentiate participants from nonparticipants in each of the six observed interpretive activities.

CHAPTER V

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

This chapter offers a discussion of the results of this study and the conclusions as they relate to interpretive organizations. Each of the three hypotheses is discussed and conclusions are drawn. Contributions of the study and recommendations for action are then presented.

Discussion

> Hypothesis 1: A significant difference exists between the number of participants and nonparticipants in the interpretive activities observed.

This study, in Hypothesis 1, assessed participation in interpretive activities to determine whether or not a significant difference existed between the number of participants and nonparticipants. The testing of Hypothesis 1 from Chapter IV indicated that for the four nonpersonal activities, the number of participants and nonparticipants did differ significantly within the activities. The majority of the chi-square score was attributed to visitor center exhibits, while lesser but substantial contributions came from self-guided walks and roadside exhibits. Visitor center stopping was less significant.

Viewing visitor center exhibits was the most significant activity for determining the representation of participants and nonparticipants. The overall floor plan of the Craggy Gardens Vistor Center (CGVC) readily encouraged participation in viewing the exhibits. As visitors entered the center they initially encountered and were attracted to an exhibit depicting floral members of the Heath family, i.e., rhododendron, azalea and laurel. This initial encounter prompted the tendency to participate by viewing additional exhibits. In the total sample of observations, 89 percent of the visitors participated in the interpretive activity. When the extensity of participation in viewing visitor center exhibits was measured for the overall population of visitors, a smaller but nearly identical percentage, 82.4, was computed. These two percentages of participation concerning visitor center exhibits indicated that the number of participants was significantly different than the number of nonparticipants. A similar percentage with regard to the extensity of participation in viewing visitor center exhibits was found by Mullins (1979) in his Southern Rocky Mountain Study, where 84 percent of the sample of visitors participated in this nonpersonal activity.

For self-guided walks, less participants were observed than expected. The extensity of visitors stopping at the self-guided walks activity was 12.5 percent of the total population. Nearly half of these visitors participated by walking the trail. Mullins (1979) found that 62 to 66 percent of the visitors in his study participated in taking a self-guided walk. The difference in the extent of participation for the Richland Balsam Trail was possible due to the length of the trail. Visitors were reluctant to spend 45 minutes of their leisure time on this trail. Perhaps if a shorter, 10-minute leg-stretcher was developed with a few relevant interpretive stops, more visitors would participate.

Although the observed frequencies for roadside exhibits were equal, the expected results revealed significant differences between the number of participants and nonparticipants. Less participants were observed than would be expected. The extensity of visitors stopping at this interpretive site was only 14.5 percent of the total population, half of which participated. Mullins (1979) found greater extensity of participation in this activity, with 64 to 71 percent of the visitors participating.

On the Blue Ridge Parkway, visitors were more inclined to remain within their vehicle to read roadside exhibits, the signboards. The lift type exhibits which involved visitor participation were less frequently read. This observation contradicts previous research that emphasizes the use of dynamic exhibits that allow for visitor involvement (Kuchner and Elsner, 1978; Mahaffey, 1970; Wagar, 1972; Lime, 1973). The exhibits in these studies were within the confines of an interpretive or visitor center, which required the participants to leave their vehicles and enter the center. On the Blue Ridge Parkway, however, visitors could participate by reading signboard exhibits from the comfort of their automobile. Since visitors appeared to participate by not exerting much effort, additional signboard exhibits should be erected or should replace the lift type ones to encourage participation for increased interpretive awareness.

The fourth nonpersonal interpretive activity, stopping at a visitor center, did not make substantial additions to the total chi-square score. However, trends in participation remained evident. Although participants outnumbered nonparticipants in both observed and expected frequencies, the total extensity of participation revealed equal percentages for each group. Mullins (1979) also found an equal ratio between participants and nonparticipants in the North Pacific Border and Piedmont Studies with regard to stopping at a visitor center.

In summary, the number of participants and nonparticipants can be distinguished from each other on the basis of the type of interpretive activity in which they are involved. From previous investigations, nonpersonal activities have been shown to attract greater numbers of participants than personal activities (Wagar, Lovelady and Falkin, 1976; Mullins, 1979). In Hypothesis 1, the number of participants was distinguished from the number of nonparticipants in the observed nonpersonal interpretive activities. Some activities were seen to encourage lesser participation than other activities. By applying this finding in terms of restructuring and improving the effectiveness of interpretive activities, increased participation should result.

> Hypothesis 2: A significant difference exists in the rank order of participation in selected interpretive activities during the study periods of June, July and August.

From the results of the extension of the median test, the null hypothesis was not rejected. However, an analysis of the individual cells in the contingency table, a cross-tabulation of all six activities with study periods and a rank ordering of activities according to monthly popularity revealed additional relationships presented in Chapter IV.

The extension of the median test showed that five of the six activities were above the participation median for July. The opposite was true for June. August was equally represented by activity participation above and below the median. Evidently, participation was highest in July, lowest in June and average for August. The chi-square value computed for this statistical test, however, was not significant, so definite statements concerning the rank order of participation can not be made.

The chi-square statistic computed for the activity/study period cross-tabulation was not significant. By analyzing the individual cells, however, important relationships were encountered. As indicated in Chapter IV, an average chi-square value of .308 was attributed to 83 percent of the individual contingency table cells for the total chi-square value. In spite of these insignificant cells, the remaining 17 percent (3 cells) made principal contributions regarding the total chi-square value. Evening programs supplied 1.84 chi-square points due to an under attendance for August programs. Larger chi-square values were added by guided interpretive activities. An overall under representation of participants in June accounted for 2.13 of the total chi-square value, while August contributed 3.65 points due to a tripling of attendance figures.

Further investigation related to interpretive activity and study period was explored through a rank ordering of activities. Both evening programs and guided activities experienced major changes in participation. From previously noted decreased attendance figures, evening programs subsequently sustained a reduction of three ranks in the overall popularity of interpretive activities. Guided activities, on the other hand, not only underwent an increase in attendance from June to August, but also advanced three and one-half ranks in the overall popularity.

Subtle rank ordering changes occurred for the four nonpersonal interpretive activities over the three months. Viewing roadside exhibits sustained a gradual increase in participation throughout the study periods, which resulted in a moderate increase of one and one-half ranks in overall popularity. Stopping at a visitor center and viewing visitor center exhibits, both with high attendance in July, experienced slight decreases in the rank ordering of interpretive activities. Self-guided walks, also high for July, sustained no change in rank.

Participation differences in interpretive activities based on seasonality have been documented by Wagar (1972). Visitor responses were observed to change over Labor Day due to a change in the participating age group. This seasonal difference can be expected in most recreational situations, since most parkgoers vacation and travel during the summer. A more specialized population of visitors continues to travel and participate in the off-seasons, which accounts for any change in participation.

Since this hypothesis ranked participation for strictly the summer months, no overall differences were evident among the three study periods. Most parkgoers vacation during this time, so they participate fairly equally throughout the summer. The decrease in participants for June can be attributed to several factors (weather gas shortage, school, etc.). July's increased participants were possible due to weather, popularity, floral bloom time, etc. A slight increase in participation was probably due to a vacation time preference. Equal values for August can be explained among the participants with regard to life cycles. Many families take their vacations in early August before their children return to school. Mid-way through the month when many children are back in school, amount of participation decreases and the overall representation of high and low participation balances.

In summary, the null hypothesis was not rejected based on the chi-square statistic of the extension of the median test. On the basis of this statistical test, there was no significant difference in the rank order of participation and the study periods. Through further analysis, however, the two personal interpretive activities experienced marked changes in popularity and contributed noted amounts to the total chi-square value for the related contingency table. By extending the study period and collecting additional data, a significant change in participation would be expected as the visitor population changes composition (Wagar, 1972).

> Hypothesis 3: There is a significant relationship between participation/nonparticipation and any particular social aggregate, social group, time/environment, place or associated activity variable.

Social aggregate, social group, time/environment, place and associated activity characteristics in this study were proposed to distinguish participants from nonparticipants in any particular interpretive activity. As determined in Chapter IV, several study variables discriminated participants from nonparticipants in the six observed interpretive activities.

Two social aggregate variables were found to be significant for three interpretive activities. Both social group variables were significant for only one interpretive activity. A single time/environment variable differentiated participants from nonparticipants in the two personal interpretive activities. The two place variables were significant in three of the interpretive activities. For the final set of variables, all six observed interpretive activities revealed significant differences between participants and nonparticipants and combinations of twelve associated activity variables.

Social age, a social aggregate variable, differentiated participants from nonparticipants in self-guided walks and visitor center stopping. For self-guided walks, participants were over represented by people under 17 years of age and under represented by those over 51 years of age. More nonparticipants were in this latter age bracket. An opposite trend in participant ages was found in visitor center stopping. Younger visitors were evenly distributed between participants and nonparticipants, while people over 51 years of age displayed a greater tendency to participate in the activity, and subsequently outnumbered nonparticipants of the same age. This greater number of elderly participants was probably due in part to organized groups which visited the site.

Hendee, Gale and Catton (1971) linked age with the preference for certain outdoor recreation activities. As a person ages, he prefers to engage in more passive activities as opposed to active ones. Self-guided walks, an active activity, subsequently entice few elderly visitors to participate. These people are more inclined to participate in less strenuous activities, such as the ones associated with the visitor center. The high numbers of elderly participants at the CGVC were observed because of the associated activities. Within the visitor center itself there were varying intellectual levels of exhibits. Bultena, Renninger and Field (1978) discovered that elderly participants in interpretive activities desired and sought more in-depth and challenging presentations. If more of these presentations and less superficial, uninformative ones were incorporated and offered by the NPS on the Blue Ridge Parkway, increased participation from the significant population of retirees would result.

The second social aggregate variable that appeared to differentiate participants from nonparticipants in the interpretive activity of viewing visitor center exhibits was race. For this activity, all Blacks and Orientals, although under represented, participated by viewing the exhibits. The single mixed couple and one-ninth of the observed Caucasians failed to participate. Throughout all six interpretive activities, Caucasians were primarily observed as both participants and nonparticipants while the other races were less frequently encountered. Similar studies have discovered analogous results concerning the under representation of minorities (Irwin, 1978; Mullins, 1979; Owens, 1970). Caucasians predominantly outnumber Blacks and other minorities in National Park attendance and activity participation. Everhart (1972) supports this finding with the statement:

> National Parks are essentially a middle-class experience. The culturally disadvantaged are not a significant part of the statistics of national park travel, and black families are seldom encountered in campgrounds.

Washburne (1978) found that leisure differences between Blacks and Caucasians result from differences in socioeconomic situations, in addition to cost and transportation barriers. Bultena and Field (1978) confirmed the assumption that socioeconomic status was positively related to the frequency of national park visits. However, lower class folks still came to parks in limited numbers. Bultena and Field also suggest that the under representation of low-status groups is usually attributed to their inability to afford park travel. Travel expenses are presumably the major explanation for the definite under representation of Blacks and minorities on the Blue Ridge Parkway. Since this National Park is a roadway, visitors must rely on personal transportation to fully appreciate and enjoy the park. Travel expenses can become significantly high. As a result, lower socioeconomic individuals, with limited financial resources might not visit the Parkway and participate in the activities. To compensate for the travel expenses and the under representation of minority visitors, the managers of the BRP should build more interpretive and visitor-oriented sites adjacent to and in close proximity with the large metropolitan areas that the Parkway passes. Perhaps more low socioeconomic citizens in these cities would be inclined to attend and participate in the provided park functions.

Both social group characteristics, group type and total number in the group, were found to be significant for viewing visitor center exhibits. Most participants were with their immediate family consisting of three to four members. Nonparticipants, although also accompanied by their immediate family, were equally observed alone in single/solitary groups. As was mentioned in the review of literature from Chapter II, the social group and its composition were believed to have a large effect on participation (Field and Wagar, 1974; Mullins, 1979). Lime (1973) and Mullins (1979) found that family groups were the most frequently encountered social groups. The choice to participate in an activity was shown by Christensen and Yoesting (1973) not to be an individualized decision, but one which was greatly influenced by peer or family group affiliation. Group size, which directly corresponded to participation in several investigations, varied from two to five members (Irwin, 1978; Bousquet, 1976; Keuhner and Elsner, 1978).

Since family groups of three to four members were the most prevalent participants on the BRP, interpretive programs and services should be further designed to relate to this social group. With the incidence of children in family groups, a greater emphasis on interpretive programs designed for children should be addressed. Yoesting and Christensen (1978) investigated the influence of visitor participation on children and found that involvement at this age tended to carry over to adult involvement. To help insure future involvement, interpretation at all levels should be practiced.

Weather was the only time/environment variable that discriminated participants from nonparticipants in the two personal interpretive activities. For evening programs, participation slightly increased as conditions changed from sunny to overcast/foggy, but abruptly dropped off with inclement weather. Although indoor facilities were utilized during these conditions, greater nonparticipation was observed. A possible explanation for this difference might be the location of the indoor facility. Statistically, the site was not found to be significant for evening programs, but numerically, major relationships were apparent. During sunny and overcast/foggy weather conditions, programs were generally presented at the campfire circle located within the confines of the campground. Sampled participants outnumbered sampled nonparticipants at these programs. When the weather was inclement, evening programs were transferred indoors to the Old Pisgah Inn positioned approximately one-quarter of a mile from the campground and across the Blue Ridge Parkway. Based on the distance factor, the safety hazard of crossing the Parkway and inadequate directional signs from the campground to the Inn, participation greatly decreased during inclement weather conditions at this site. Improving the sign system that leads campground visitors to the Inn would be a feasible suggestion for increasing participation figures.

For guided activities, weather conditions revealed different relationships between participants and nonparticipants. Participants over represented nonparticipants during sunny conditions, but both groups tended to balance each other when conditions were overcast/foggy. Definite conclusions could not be made with regard to inclement weather since an inadequate number of observations were collected during these conditions, all of which were participants. In spite of this unequal representation, nonparticipants would be expected to outnumber participants when the weather was inclement. As a result, more guided activities should be implemented that utilize the indoor facilities when the weather conditions are inclement and also encourage participation during these conditions.

Both place variables, access and site, revealed interesting relationships for different activities. Access differentiated participants from nonparticipants for stopping at a visitor center interpretive activity. The majority of the participants approached and entered the visitor center parking area from an indirect access, which required them to cross a lane of traffic. Most nonparticipants, on the other hand, had direct access to the center. It is postulated that visitors were more inclined to participate despite their indirect access, because they desired information from the visitor center, the first manned facility on the BRP north of Asheville, North Carolina. With Asheville only 18 miles away, the nonparticipants, who were driving south, presumably chose to continue driving until they reached this metropolitan area.

Although access differentiated participants from nonparticipants at CGVC, opposite results were found than were expected. Direct access would seem to encourage greater participation than would indirect access. Since this assumption was not verified by the results, other outside factors presumably influenced the situation. For CGVC, the physical location factor appeared to have the greater effect on participation. Even though participants were differentiated from nonparticipants with regard to access. This place variable cannot soley be utilized in assessing participation due to other influential factors. Interesting relationships were obtained, but definite conclusions were not feasible.

The site of the roadside exhibits interpretive activity revealed interesting relationships between participants and nonparticipants. When the seven individual sites utilized for visitor observations were analyzed separately with participants/nonparticipants, a significant relationship resulted. However, this relationship lacked meaning since each site was different. As a result, the sites were then divided into a dicotomy of overlooks with a panoramic view and overlooks without a view. Nearly equal numbers of participants and nonparticipants were found in both categories, so the relationship was not significant. However, participants and nonparticipants at overlooks with a panoramic view over represented visitors at overlooks without a view by nearly five to one. When the visitors stopped for the view, approximately half of them noted the exhibit and subsequently read its contents to supplement their overall environmental experience. Thus, having a scenic view made a difference in participation/nonpaticipation.

An additional factor that aided in explaining the differences in participation was whether or not the overlook was positioned in close proximity to an intersection of the BRP with an outside roadway. Entering visitors on the Parkway displayed a higher inclination to stop at the adjacent overlook to make final checks on their automobiles and to verify their location and intended direction. These people chose not to participate by reading the exhibit, and therefore were classified as nonparticipants.

From these findings, management should note that for effective interpretation roadside exhibits should be located at overlooks with panoramic views. To increase usage of overlooks without views, a combination of interpretive media ought to be provided, such as roadside exhibits with self-guided trails. This combination of activities may compensate for the less aesthetic view and encourage participation. With significant numbers of visitors stopping at overlooks adjacent to intersections, steps should be taken at these sites to promote participation of reading the provided exhibits. Suggestions include building overlooks with views and constructing dynamic exhibits which entice visitors to participate. Increased participation should result.

Of the 15 total associated activity variables, 12 were significant for combinations of the six interpretive activities. The specific length of the activity tended to determine who participated and who did not participate for visitor center exhibits, visitor center stopping, evening programs and guided activities. Nonparticipants within the visitor center asked for information and spent less than five minutes there. In contrast, participants devoted from five to fifteen minutes to viewing the provided exhibits and engaging in other related activities. By participating within the center, these same individuals, who were concurrently participants in the activity stopping at the visitor center, were found to spend a total of 15 to 30 minutes at the site. Nonparticipants, in comparison did not stop, so were nonspecific in their activity length as they drove past the site.

Since most participants tended to devote similar and predictable amounts of time to interpretive activities, such as viewing visitor center exhibits and stopping at a visitor center, management can plan and design these activities to maximize the visitor's experience. By planning on the basis of allocated time, increased and improved effectiveness of interpretation should result.

Nearly identical findings were encountered relating to the length of the activity and participation in personal interpretive programs. Both activities experienced maximum participation figures for programs lasting from 30 minutes to one hour. As programs continued beyond one hour in length, participants largely decreased in numbers while the number of nonparticipants increased. Visitors were apparently willing to spend up to one hour of their leisure time engaging in a personal interpretive activity, but they seemed reluctant to spend more than that length of time. With this distinct relationship between participation and length of activity, major implications were evident for limiting most personal interpretive programs to approximately one hour in length.

The second associated activity variable that was significant for self-guided walks, visitor center stopping, evening programs and guided activities was the act of talking to a ranger. Participation was determined by noting any conversation between a visitor and either the observer, a ranger or an interpreter. As was observed for self-guided walks and evening programs, most people (participants as well as nonparticipants) did not talk to a ranger with nonparticipants noted more frequently. For those visitors who did talk, similar tendencies were observed. A more distinct difference was exhibited by people stopping at a visitor center and participating in guided activities in terms of talking to a ranger. Participants primarily talked to a ranger, whereas the majority of nonparticipants did not. Since the visitors were generally provided with the opportunity to speak with a ranger at both of these interpretive activities, the occurrence of this action could accurately discriminate between participants and nonparticpants.

The total percentage of visitors talking to a ranger at the aforementioned activities indicated the sporadic occurrence of this action. For self-guided walks and evening programs, only 16 percent of the visitors talked to a ranger, 31 percent spoke to a ranger while stopping at the visitor center and 61 percent talked during the guided activities. Although not significant, 35 percent of the visitors conversed with a ranger inside the visitor center. Mullins (1979) found similar percentages in terms of talking to a ranger in the Piedmont, 34 percent in the North Pacific Border area and 74 percent in the Southern Rocky Mountain region.

The results of this study and the study by Mullins reveal an overall under representation of participants, as well as nonparticipants, talking to a ranger. To explain this representation, the nature of the activity must be considered. Since talking to a ranger is a personal activity, fewer participants would be expected as shown by Mullins (1979)in the comparison of personal and nonpersonal activities. Due to this documented difference, less participants would be expected to talk to a ranger, but these participants should outnumber nonparticipants. Thus, the findings of this study can be verified on this basis.

The performance of other activities at the site was an associated activity variable that was significant for self-guided walks, roadside exhibits and visitor center stopping. Although the chi-square assumption concerning the size of expected frequencies was violated in all three cases, marked differences and trends were still apparent. Participants engaged in certain minor activities related to the major observed interpretive activity. Nonparticipants, in comparsion, predominantly did things related to their automobile along with actions associated with the site, such as viewing and photographing the scenery. Participants and nonparticipants engaged in a wide variety of activities at a specific interpretive event. To promote and encourage continued participation of these activities in addition to participation in the interpretive event, the facilities should be provided, such as picnic tables, restroom facilities, drinking fountain, trash receptacles and combinations of interpretive media. With the provided facilities, increased participation should result.

Possessing special equipment was another significant associated activity variable for self-guided walks, visitor center stopping and evening programs. In all three activities, no equipment was observed for the majority of the nonparticipants. Participants, in contrast, were more inclined to possess some special item. However, the lack of equipment, was also observed for participants, but to a lesser extent. Of the special equipment observed, most items aided the visitor in enjoying and understanding the site, along with encouraging greater and more meaningful participant involvement.

Both of the personal interpretive activities showed significant relationships between vehicle/lodging type and participation. This significance was mainly attributed to a lack of information related to participants. Participants could not be accurately distinguished from nonparticipants. General trends were apparent, though, for nonparticipants in both activities. The majority of these nonparticipants traveled and resided in hard top trailers, vans, pickup campers and tents. The other interpretive activities, which were not significant in terms of the vehicle/lodging variable, also revealed numerous nonparticipants in vans and pickup campers. For these activities, fixed lodging was the primary mode of overnight stay. Mullins (1979) found similar results in terms of vehicle/lodging modes of participants and nonparticipants. A significant percentage of participants relied on fixed lodging, while most nonparticipants traveled and camped in vans, pickup campers and tents.

In the two activities that emphasized interpretive exhibits (roadside exhibits and visitor center exhibits), reading time was determined to be significant. Since the participation criterion for these activities involved actually viewing and reading the exhibits, nonparticipants were characterized by not reading any exhibits for any length of time. Therefore, distinct judgements could only be made in light of this fact. Closely associated with reading time for roadside exhibits was the variable concerning who read aloud. The majority of participants did not read the exhibits out loud, except for family groups which accounted for the bulk of the observed oral readings as mothers or fathers explained and discussed the exhibits. Thus, the importance of the participating family social group was repeatedly evident. With the frequency of this participating group, greater emphasis should be placed on providing interpretive services that encourage complete family involvement and interaction. Outside interaction with other social groups should also be prompted. The interpreter should not only present appropriate programs that relate to the participating social groups, but should also plan and design activities with the goal of enticing increased involvement and interaction from the nonparticipating groups.

For the visitor center exhibits activity, a related variable to reading time was the number of exhibits read. In a similar manner, nonparticipants failed to view any exhibits, while participants viewed two to six displays for one to five minutes.

Two other associated activity variables discovered to be significant for viewing visitor center exhibits activity were social interaction and flow pattern. Nonparticipants generally displayed an inconsistent flow pattern as they entered, asked questions and then exited without speaking to anyone except the ranger/interpreter on information duty. Participants, on the other hand, tended to interact with other members within their social group as they flowed through the center in either of the specified directions. However, a left to right pattern was the most common.

Parallel with the circumstances surrounding some of the previous associated activity study variables, amount of time spent of the trail was also seen to be interesting for self-guided walks. Since the criterion for participation in this activity involved walking the trail, all nonparticipants were classified in the category, did not walk trail. On the basis of this variable, participants could easily be distinguished from nonparticipants. In computing this relationship, however, the chi-square assumption regarding cell size was violated. Thus, since significant differences could not be stated between participants and nonparticipants based on this variable, only an interesting relationship was apparent.

For the participants, the majority spent the predicted amount of time, 45 minutes, walking the trail. Although the establishment of a shorter trail has previously been suggested for the substantial percentage of visitors unable to spend 45 minutes on a trail, major repairs and improvements should also be made to the present trail for those who do have the time. New attractive signs that interpret the fragile mountain ecosystem should replace the old ones, a new trail head sign should seek to provoke participation, and the trail should be restructured to avoid the erosion problem that plagues the present trail. With these suggested improvements, increased participation should result providing these visitors with a greater environmental awareness and appreciation.

Type of activity was the final significant study variable associated with guided activities. By combining the eight specific activities into four general categories, definite relationships could be found between activity and participation. Most participants were observed in the physical activities involving walks or in the ones conducted within or near the campground, i.e., in the campfire circle area. Nonparticipants were more frequently seen during art-related activities, partly due to activity location. These programs were executed indoors at the Old Pisgah Inn. Unequal attendance figures were characteristic of this activity as they also were for indoor evening programs. The distance factor related to the campground prevented visitors from attending art-related activities in greater numbers.

The findings of this research hypothesis indicate that several different study variables successfully differentiate participants form nonparticipants in each of the six interpretive activities. None of the variables (social aggregate, social group, time/environment, place and associated activity) are universal across all of the activities, but general trends are evident. Aside from assessing participation with these variables, they can also be incorporated by the interpreter to effectively plan interpretive programs.

Conclusions

The conclusions drawn from this study that contribute to the knowledge and theoretical development of interpretation are the following:

1. Park visitors are more inclined to participate in nonpersonal interpretive activities (primarily viewing visitor center exhibits) than not to participate as determined by a chi-square distribution.

2. Certain social aggregate variables -- soical age and race -- discriminate participants from nonparticipants for

specific interpretive activities.

3. Social group variables -- group type and total number in group -- distinguish participants from nonparticipants in the interpretive activity of viewing visitor center exhibits.

4. Weather conditions significantly differentiate participants from nonparticipants for personal interpretive activities.

5. Certain place variables discriminate between participants and nonparticipants at particular interpretive activities.

6. The following activity variables are helpful in differentiating participants from nonparticipants in interpretive activities:

   a. Talked to Ranger
   b. Special Equipment
   c. Other Activities at Site
   d. Amount of time on Self-Guided Trail
   e. Who Read Roadside Exhibits Aloud
   f. Exhibit Reading Time
   g. Number of Exhibits Read
   h. Social Interaction within a Visitor Center
   i. Flow Pattern throughout a Visitor Center
   j. Length of Activity
   k. Vehicle/Lodging
   i. Type of Guided Activity

7. Participants are more inclined to possess special equipment than nonparticipants at the interpretive activities.

8. Unobtrusive observation measures serve as viable means of collecting visitor information that discriminates participants from nonparticipants.

Recommendations

Based upon the discussion of the research results and the conclusions drawn, a set of recommendations is presented.

These recommendations are divided into four parts: recommendations for further research, implications for interpretive organizations, suggested techniques for data collection and application of data.

Recommendations for Further Research

As discussed in Chapter II, information on people as the interpretive audience is currently lacking, especially in the realm of participation assessment. This study successfully differentiated between participants and nonparticipants on the basis of certain study variables. To investigate the relationships among these variables and to permit generalizations of the results, expanded research is needed in intrepretive visitor analysis and participation assessment. The following recommendations are suggested for further research related to the results of the study.

1. Similar research studies should be conducted in areas of varying sizes, types and geographical locations. Resulting information could supplement what is currently known, make additions to the ongoing knowledge concerning the interpretive visitor, expose additional problem areas and verify the findings of this study. The results of these visitor-related investigations should subsequently be made available to working intrepreters to allow the presentation of more effective interpretation which relates to the proper visitor characteristics.

2. Despite the fact that Hypothesis 2 was not rejected, the time/environment variable concerning the date of the activity should not be neglected. Wagar (1972) documented a difference in participation with a recording quizboard which he had discovered with respect to the date and the changing seasons. It is recommended that a more detailed study be undertaken to evaluate participation and seasonality.

3. Study results indicate that the type of interpretive activity is related to the study variables which discriminate

participants from nonparticipants. Social aggregate variables had limited explanatory use. An individual's social age and race, although signifncant for two activities apiece, revealed similar trends for all activities. Residence, on the other hand, was not significant, but portrayed definite relationships. Participants were basically from out-of-state, while nonparticipants were largely in-state inhabitants. McCool (1978) discovered that in-state/out-of-state participation patterns differed in water-based recreational activities. Mullins (1979) found that in-state residents participated less in nonpersonal interpretive services. An explanation of this behavior through other factors or characteristics has not been offered. Future research should focus on this question.

Social group variables were only significant for viewing visitor center exhibits. Parallel results were apparent for the other activities also. The immediate family group was the most prevalent group type, and groups of size two to four were most frequently observed. Due to its noted influence, the social group has been suggested by many researchers as an emphasis on the levels of participation of people in recreational areas (Cheek and Burch, 1976; Field and Wagar 1974; Lime, 1973; Mullins, 1979; Silvy, 1977).

Variables related to time/environment were not overly significant, but nevertheless showed definite trends in participation. The inability to control some of these variables undoubtedly accounted for the lack of significance. As suggested by Taylor and Knudson (1973), Godin and Matz (1976) Hecock 1969) and Dorfman (1979), these factors are very important in influencing the effectiveness of and the attendance to interpretive activities. Morfoot and Blake (1978), however, disclosed the fact that few studies have directly controlled or reported the effect of these variables.

Both place variables were found to be associated with participation in two interpretive activities (stopping at a visitor center and guided activities). The location of the activity appeared to indirectly affect participation rates and levels. Knowledge concerning visitor perception characteristics, such as attitude, motives, perceptions, expectations and satisfaction, would also aid in explaining the effect on participation which can be attributed to place variables.

Several associated activity variables were significant for each of the six interpretive activities. None, however, was universal for all the activities. A few of these variables were unique and characteristic for the individual activity. With a more indepth evaluation of each particular activity, additional variables may be discovered that aid in the differentiation of participants from nonparticipants.

Implications for Interpretive Organizations

Based upon the discussion of results and conclusions drawn an assessment of participation is recommended for all activities provided by all interpretive organizations. Since an interpretive organization constantly strives to grow and maintain itself (Kotler, 1975), information related to the visitor, i.e., the potential interpretive audience, is paramount to success. The following implications are offered with respect to the findings of this study.

1. Since interpretive services have largely been provided for the "average" person, visitor analysis studies which determine specific individual characteristics have not been conducted. In order to provide effective services, interpretive organizations must realize the importance of executing and securing a systematic visitor analysis, in addition to actively utilizing the information for planning and pro-

graming.

2. This study found that minority racial groups were significantly under represented as park visitors. Data from studies conducted by Bultena and Field (1978) and Washburne (1978) support this finding related to minority participation at National Parks. Washburne suggests that Blacks and American Indians view these areas as symbols of white domination. With a more intensive effort towards increased public relations, this under representation may be lessened. Bultena and Field emphasize the travel expense that prevents and limits minority participation. If more services and activities are provided in or near areas of high concentration of low socioeconomic groups, greater numbers should attend and participate in the programs.

3. The location of certain activities was found to determine participation. Proximity of the personal activities to areas of visitor concentration had affected participation/nonparticipation in the past (Taylor and Knudson, 1973). By locating the activity and related facility closer to the people, greater participation should result. The positioning of roadside exhibits at overlooks with scenic views also influenced participation, as compared with participation at nonscenic overlooks.

In addition, roadside exhibits experienced a difference in participation due to exhibit type. More visitors were inclined to remain within the confines of their automobile and read the signboard exhibits, than they were to actively participate by manipulating and reading the lift-top displays. To increase usage and participation, more signboard and less lift-top exhibits are suggested.

4. Although moderate numbers of children were observed during this study as both participants and nonparticipants, increased efforts should be made to provide additional interpretive services to this important range of ages. Yoesting

and Christensen (1978) studied the relationship between adult participation and childhood participation in activities. Their results indicated that "If a person is highly active in outdoor recreation as a youth, there is a good likelihood of active adult participation." Therefore, the importance of relating interpretation to children and exposing them to related activities could determine the resulting level of involvement they will retain and exhibit as adults.

Suggested Techniques for Data Collection

Based on the discussion of research results and the conclusions drawn, it appears that some study variables are effective in assessing participation while others are not. It also seems that additional information, acquired through means other than unobtrusive measures, is needed to completely assess participation. The following list suggests techniques for data collection:

1. Utilize the available resources. An interpretive organization can depend on permanent and seasonal employees, student interns and volunteers to conduct participation assessment and visitor analysis studies. By involving the entire staff, cooperation and concerted efforts will lead to a successful and effective operation. The use of volunteers also saves manpower, time and money, either by eliciting free help for the collection of data or by freeing staff members to do the collecting.

2. Promote additional studies that assess participation at all types of interpretive activities throughout the year. The resulting data, representative of a cross-section of users, could have important implications for interpretive planning and programming.

3. Employ a variety of research approaches for assurance that the data are available under a wide variety of conditions. Questionnaires and interviews are relatively easy to administer and analyze. Suggestion boxes and registration books are inexpensive and time efficient in collecting data. Visitor observation, participant and/or unobtrusive, is applicable under most circumstances and does not require approval from the U.S. Office of Management and Budget as do other approaches utilized by Federal organizations. Informal structured interviewing (Bousquet, 1976) of visitors is a frequently used approach that sometimes results in data that may be difficult to quantify. A combination of two or more of these research approaches would supply the most reliable and valid set of data for a visitor analysis. For instance, questionnaires and unobtrusive observations would provide a means for comparing behaviors with attitudes.

4. Employ evaluation techniques to determine the effectiveness of data collection approaches and interpretive activities. Time-lapse photography, auditing by an expert, self-testing devices, panel of outsiders and observation of audience attention are several of the evaluation techniques described by Wagar (1967b). By using these techniques, data collection becomes more efficient and reliable. Interpretive activities may also be imporved from information obtained through the techniques.

Application of Data

This study was designed to obtain data describing the summer visitors that do and do not participate in interpretive activities on the southern portion of the Blue Ridge Parkway. Due to the narrow scope of the study population, broad-scale generalizations are not suggested. However, the utility of the findings for ongoing programming, planning and management of interpretive services is encouraged. Since interpretation currently lacks a foundation of empirically-gathered descriptive data about the visitor (Mullins, 1979), the results of this study are valuable in contributing and filling in this void of knowledge.

A collection of study variables have been provided that identify definite relationships to interpretation. These variables may be applied in recreational areas to describe and explain what is occurring in the area, particularly in terms of interpretive activity participation. By noting place of residence, age, social group composition, type of vehicle/lodging or similar information that can be collected on-site, interpreters may better understand participation patterns. The sole use of unobtrusive observation measures was successfully utilized and subsequently verified by this study for the collection of visitor, time/environment, place and activity characteristics. Similar techniques have been designed and tested by Hanna and Silvy (1978), Field, (1978) and Mullins (1979). As the field of interpretation expands and grows, additional decisions will be made that rely on more tangible data such as the type provided by this study.

The overall intent of this study was to increase what was empirically known about interpretation. Selected findings from a previous study by Mullins (1979) were reinvestigated in a different interpretive and geographical setting, and were discovered to also apply to the study situation. As a result, the application of these and previous findings is suggested for those involved with interpretation. Applying this data must be handled carefully since specific generalizations may be difficult. Additional studies to accumulate more related information and to further test past findings are encouraged. Through increased knowledge, interpreters will be able to be more effective in providing their related services and in communicating with their all-important clientele -- the visitor.

REFERENCES

Beechel, J. M. 1975. Interpretation for Handicapped Persons. University of Washington School of Forest Resources, Seattle, WA.

Bollman, S. R., V. M. Moxley and N. C. Elliott. 1975. Family and Community Activities of Rural Nonfarm Families with Children. Journal of Leisure Research 7(1): 53-62.

Bousquet, W. S. 1976. A Basis for Interpretive Planning: the Demographic and Behavioral Characteristics of Visitors to the Eleven Point National Scenic River, Missouri. Unpublished Masters thesis. The Ohio State University, Columbus, OH.

Bultena, G. L. and D. R. Field. 1978. Visitors to National Parks: A Test of the Elitism Argument. Leisure Sciences 1(4): 395-409.

Bultena, G. L., D. R. Field and R. Renniger. 1978. Interpretation for the Elderly -- A Study of the Interpretive Interests of Retired National Park-goers. Journal of Interpretation 3(2): 29-32.

Burch, W. R., Jr. 1964. A New Look at an Old Friend -- Observations as a Technique for Recreation Research. Pacific Northwest Forest and Range Experiment Station, USDA Forest Service.

Burdge, R. J. and D. R. Field. 1972. Methodological Perspectives for the Study of Outdoor Recreation. Journal of Leisure Research 4(1): 63-72.

Cheek, N. H., Jr. 1978. Recreational Activities: A Preliminary Investigation of Structural Properties. Presentation at Texas Academy of Science Annual Meeting, Lubbock, Texas.

Cheek, N. H., Jr. and W. R. Burch, Jr. 1976. The Social Organization of Leisure in Human Society. Harper and Row Publishers. New York.

Cheek, N. H., Jr., D. R. Field and R. J. Burdge. 1976. Leisure and Recreation Places. Ann Arbor Science Publishers, Inc. Ann Arbor, Michigan.

Cherem, G. J. 1977a. Position Paper on Interpretive Research. The Ohio State University School of Natural Resources, Columbus, OH.

Cherem, G. J. 1977b. The Professional Interpretor: Agent for an Awakening Giant. Journal of Interpretation 2(1): 3-16.

Cherem, G. J. and D. E. Traweek. 1977. Visitor Employed Photography: An Aid in Planning Guided Activities. The Interpreter 9(1): 13-15.

Christensen, J. E. and D. R. Yoesting. 1973. Social and Attitudinal Variants in High and Low Use of Outdoor Recreational Facilities. Journal of Leisure Research 5(2): 6-15.

Clark, R. N. 1977. Alternative Strategies for Studying River Recreationists. In: Proceedings: River Recreation Management and Research Symposium. USDA Forest Service General Technical Report NC-28, North Central Forest Experiment Station, St. Paul, MN, pp. 91-100.

Dick, R. E., E. Myklestad and J. A. Wagar. 1975. Audience Attention as a Basis for Evaluating Interpretive Presentations. USDA Forest Service Research Paper PNW-198, Pacific Northwest Forest and Range Experiment Station, Portland, OR.

Dorfman, P. W. 1979. Measurement and Meaning of Recreation Satisfaction -- A Case Study in Camping. Environment and Behavior 11(4): 483-510.

Everhart, W. 1972. The National Park Service. Praeger Publishers. New York.

Feldman, R. L. 1978. Effectiveness of Audio-Visual Media for Interpretation to Recreating Motorists. Journal of Interpretation 3(1): 14-19.

Field, D. R. 1978. Ch. Scientist Cooperative Park Studies Unit, National Park Service, University of Washington, Seattle, WA.

Field, D. R. and J. T. O'Leary. 1973. Social Groups as a Basis for Assessing Participation in Selected Water Activities. Journal of Leisure Research 5(2): 16-25.

Field, D. R. and J. A. Wagar. 1974. Visitor Groups and Interpretation in Parks and Other Outdoor Leisure Settings. Guideline 4(2): 13-21.

Godin, V. B. and G. J. Matz. 1976. The Effect of Weather Conditions on Backcountry Overnight Facilities Usage. Journal of Leisure Research 8(4): 307-311.

Gunn, C. A. 1979. Resource Management: For Visitors. Fish and Wildlife News. USDI. pp.20-24.

Hanna, J. W. and V. A. Silvy. 1978. Visitor Observation for Interpretive Programming. Texas A & M University Departmental Technical Report No. 78-9, Texas Agricultural Experiment Station, College Station, TX.

Hecock, R. D. 1969. Recreation Behavior Patterns as Related to Site Characteristics of Beaches. Journal of Leisure Research 2(4): 237-250.

Hendee, J. C., R. N. Clark and T. E. Dailey. 1974. Fishing and Other Recreation at High Mountain Lakes: Some Implications for Resource Management. Paper presented at the annual meeting of the American Fisheries Society.

Hendee, J. C., R. P. Gale and W. R. Catton, Jr. 1971. A Typology of Outdoor Recreation Activity Preferences. Journal of Environmental Education 3(1): 28-34.

Hodgson, R. W. 1975. Interpretation Research. The Interpreter 7(3): 16-17.

Hunt, J. D. and P. J. Brown. 1971. Who Can Read Our Writing? Journal of Environmental Education 2(4): 27-29.

Irwin, L. L. 1978. Interaction of Interpretation with Selected Visitor Attributes and Behavior at Historic Sites. Unpublished Masters thesis. Texas A & M University, College Station, TX.

Isaac, S. and W. B. Michael. 1977. Handbook in Research and Evaluation. Edits Publishers. San Diego, CA.

Kotler, P. 1975. Marketing for Non-Profit Organizations. Prentice-Hall, Inc. New Jersey.

Kuehner, R. A. and G. H. Elsner. 1978. Response of Visitors to the Rainbow Trail: an evaluation of an interpretive area in the Lake Tahoe Basin, California. Pacific Northwest Forest and Range Experiment Station. USDA Forest Service, Berkely, CA.

Kwant, R. C. 1965. Phenomenology of Social Existence. Duquesne University Press. Pittsburgh, PA.

Lee, R. G. 1972. The Social Definition of Outdoor Recreation Places. In: W. R. Burch, N. H. Cheek, Jr. and L. Taylor (eds.), Social Behavior, Natural Resources and the Environment. Harper and Row. New York.

Lime, D. W. 1973. An Exploratory Study of the Use of Two Forest Service Visitor Information Centers: Voyageur and Sylvania. USDA Forest Service Office Report. North Central Forest Experiment Station, St. Paul, MN.

Loether, H. J. and D. G. McTavish. 1974a. Descriptive Statistics for Sociologists. Allyn and Bacon, Inc. Boston, MA.

Loether, H. J. and D. G. McTavish. 1974b. Inferential Statistics for Sociologists. Allyn and Bacon, Inc. Boston, MA.

Mahaffey, B. D. 1973. Curricular Guidelines for Environmental Interpreter Training Programs. Journal of Environmental Education 5(1): 23-30.

Mahaffey, B. D. 1970. Effectiveness and Preference for Selected Interpretive Media. Journal of Environmental Education 1(4): 125-128.

Martinkovic, P. L. 1977. The Effects of an Interpreter's Nonverbal Behavior on Park Visitors During a Natural History Presentation. Unpublished Masters thesis. The Ohio State University School of Natural Resources, Columbus, OH.

Maynard, M. K. 1979. Collection and Non-Collection of Visitor Information: A Study of Ohio Interpretive Organizations. Unpublished Senior Honors Research Project. The Ohio State University School of Natural Resources, Columbus, OH.

McCool, S. F. 1978. Recreation Activity Packages at Water-Based Resources. Leisure Sciences 1(2): 163-173.

McCracken, J. D. 1980. Class notes: AGR EDUC 885N. The Ohio State University, Columbus, OH.

McDonough, M. H. 1977. In: Mullins, G. W. and J. W. Hanna, AIN Colloquium on Interpertive Research. The Interpreter 9(3): 17-19.

Meyersohn, R. 1969. The Sociology of Leisure in the United States: Introduction and Bibliography, 1945-1965. Journal of Leisure Research 1(1): 53.

Morfoot, C. and B. F. Blake. 1978. Evaluation of Environmental Interpretation -- Pitfalls and Opportunities. Journal of Environmental Education 10(1): 23-31.

Mullins, G. W. 1979. Participation and Nonparticipation in Interpretation: A Study of People, Places, and Activities. Ph. D. dissertation. Texas A & M University, College Station, TX.

Mullins, G. W. 1975. A Survey of Resource Materials for Environmental Interpreters. Unpublished Masters thesis. Texas A & M University, College Station, TX.

Mullins, G. W. and J. W. Hanna. 1977. AIN Colloquium on Interpretive Research. The Interpreter 9(3): 17-19.

National Park Service. 1978. Annual Statement for Interpretation and Visitor Services. USDI National Park Service.

Nie, N. H., C. H. Hull, J. G. Jenkins, K. Streinbrenner and D. H. Bent. 1975. SPSS: Statistical Package for the Social Sciences, 2nd edition. McGraw-Hill, New York.

Oltremari, J. V. 1974. A Survey on Desirable Preparation and Career Development of Interpretive Personnel. Unpublished Masters thesis. University of Washington College of Forest Resources, Seattle, WA.

Owens, G. P. 1970. Outdoor Recreation: Participation, Characteristics of Users, Distances Traveled, and Expenditures. Ohio Agricultural Research and Development Center, Wooster, OH.

Reyburn, J. H. and D. M. Knudson. 1975. The Influence of Advertising on Attendance at Park Programs. The Journal of Environmental Education 7(2): 59-64.

Roggenbuck, J. W. 1979. The Field Experiment: A Suggested Method for Interpretation Evaluation. Journal of Interpretation 4(1): 9-11.

Sax, G. 1968. Empirical Foundations of Educational Research. Prentice Hall. New York.

Siegel, S. 1956. Nonparametric Statistics for the Behavioral Sciences. McGraw-Hill Book Company. New York, New York.

Sharpe, G. W. 1976. Interpreting the Environment. John Wiley and Sons, Inc. New York.

Shiner, J. W. and E. L. Shafer, Jr. 1975. How Long Do People Look at and Listen to Forest-Oriented Exhibits? USDA Forest Service Research Paper NE-325, Northeastern Forest Experiment Station, Upper Darby, PA.

Silvy, V. A. 1977. The Function of Interpretation as Perceived by Park Visitors and Interpreters. Unpublished Masters thesis. Texas A & M University Department of Recreation and Parks, College Station, TX.

St. Clair, S. L., Jr. 1972. Relative Effectiveness of Two Personal Interpretive Methods at a Community Nature Center. Unpublished Masters thesis. Michigan State University Department of Park and Recreation Resources, East Lansing, MI.

Taylor, C. E. and D. M. Knudson. 1973. Area Preferences of Midwestern Campers. Journal of Leisure Research 5(2): 39-48.

Tilden, F. 1977. Interpreting Our Heritage. The University of North Carolina Press. Chapel Hill.

Travers, R. M. W. 1967. Research and Theory Related to Audio-Visual Information Transmission. Office of Information, US Department of Health, Education, and Welfare. Washington, D. C.

Van Dalen, D. B. 1979. Understanding Educational Research, 4th edition. McGraw-Hill. New York.

Veverka, J. A. 1978. Why No One Comes to Your Interpretive Program. The Interpreter 10(3): 17-20.

Wagar, J. A. 1976a. Cassette Tapes for Interpretation. Pacific Northwest Forest and Experiment Station, USDA Forest Service. Portland, OR.

Wagar, J. A. 1976b. Evaluating the Effectiveness of Interpretation. Cape Hatteras National Seashore (NPS).

Wagar, J. A. 1966. Quality in Outdoor Recreation. Trends 3: 9-12.

Wagar, J. A. 1972. The Recording Quizboard: A Device for Evaluating Interpretive Services. USDA Forest Service Research Paper PNW-139, Pacific Northwest Forest and Range Experiment Station, Portland, OR.

Wagar, J. A., G. W. Lovelady and H. Falkin. 1976. Evaluation Techniques for Interpretation: Study Results from an Exhibition on Energy. USDA Forest Service Research Paper PNW-211, Pacific Northwest Forest and Range Experiment Station, Portland, OR.

Wandersman, A. 1979. User Participation -- A Study of Types of Participation, Effects, Mediators, and Individual Differences. Environment and Behavior 11(2): 185-208.

Washburne, R. F. 1978. Black Under-Participation in Wildland Recreation: Alternative Explanations. Leisure Sciences 1(2): 175-189.

Washburne, R. F. and J. A. Wagar. 1972. Evaluating Visitor Response to Exhibit Content. Curator 15(3): 248-254.

Weaver, H. E. 1976. Origins of Interpretation. Chapter 2 in: G. W. Sharpe (ed.), Interpreting the Environment. John Wiley & Sons. New York.

Webb, E., D. T. Campbell, R. D. Schwartz and L. Sechrest. 1971. Unobtrusive Measures: Non-reactive Research in the Social Sciences. Rand McNally College Publishing Co. Chicago, IL.

Winzeler, E. R. 1976. Nature Interpretation for the Mentally Retarded. Unpublished Masters thesis. The Ohio State University, Columbus, OH.

Yoesting, D. R. and J. E. Christensen. 1978. Reexamining the Significance of Childhood Recreation Patterns on Adult Leisure Behavior. Leisure Sciences 1(3): 219-229.

Zuzanek, J. 1978. Social Differences in Leisure Behavior: Measurement and Interpretation. Leisure Sciences 1(3): 271-293.

APPENDIX A

OBSERVATION FORMS

SELF-GUIDED WALKS

DATE ____________________

SITE ____________________

Sampling Ratio: ☐ 1/

☐ WEATHER

1. Sunny
2. Overcast/foggy
3. Inclement

☐ 1. Participant (walk SGT)
☐ 2. Nonparticipant (no walk)

SOCIAL AGE/SEX

	MALE	FEMALE
Under 6		
6-12		
13-17		
18-24		
25-35		
36-50		
51-65		
Over 65		

☐ VEHICLE/LODGING

1. Self-propelled motor home
2. Hard top trailer
3. Van, pickup camper
4. Collapsible trailer
5. Tent camper
6. Fixed lodging
7. Motorcycle - camping/noncamping
8. Not available

☐ STATE/COUNTRY

Talked to Ranger ________________

		#
PETS:	Dog(s)	☐
	Cat(s)	☐
	Other	☐ ________________

Special Equip. ____________________

NOTES:

☐ TIME

1. Morning
2. Afternoon

☐ 1. Weekend
☐ 2. Weekday

☐ AMOUNT OF TIME ON TRAIL

1. $<$15 minutes
2. $>$15 -$<$30
3. $>$30 -$<$1 hour
4. 1 hour +
5. Did not walk trail

☐ ACCESS TO OVERLOOK

1. Direct
2. Indirect

☐ GROUP TYPE

1. Alone
2. With family & friend(s)
3. With friends
4. With immediate family
5. With immediate family & other relatives
6. With organized group

☐ TOTAL # IN GROUP

☐ RACE

1. Black
2. Caucasian
3. Oriental
4. American Indian
5. Other ________________

☐ OTHER ACTIVITIES AT SITE

1. Walk pets/self
2. View scenery/photograph
3. Eat/use garbage can
4. Stop & let others pass/ turn around
5. Other ________________

ROADSIDE EXHIBITS

DATE ____________________

SITE ____________________

Sampling Ratio: 1/

☐ EXHIBIT TYPE

1. Signboard
2. Lift

☐ WEATHER

1. Sunny
2. Overcast/foggy
3. Inclement

SOCIAL AGE/SEX

	MALE	FEMALE
Under 6		
6-12		
13-17		
18-24		
25-35		
36-50		
51-65		
Over 65		

☐ TOTAL # IN GROUP

☐ VEHICLE/LODGING

1. Self-propelled motor home
2. Hard top trailer
3. Van,pickup camper
4. Collapsible trailer
5. Tent camper
6. Fixed lodging
7. Motorcycle - camping/noncamping
8. Not available

☐ STATE/COUNTRY

☐ ACCESS TO OVERLOOK

1. Direct
2. Indirect

☐ RACE

1. Black
2. Caucasian
3. Oriental
4. American Indian
5. Other ____________________

PETS: ☐ Dog(s) ☐ Cat(s) ☐ Other _____

NOTES:

☐ TIME

1. Morning
2. Afternoon
3. Evening

☐ 1. Weekend
☐ 2. Weekday

☐ LENGTH OF TIME AT OVERLOOK

1. <15 minutes
2. >15 -<30
3. >30 -<1 hour
4. 1 hour +
5. Nonspecific

ALOUD	WHO READ IN GROUP
☐	☐ 1. Mother/father
☐	☐ 2. Other adult (family G)
☐	☐ 3. Child
☐	☐ 4. Friend
☐	☐ 5. Alone
☐	☐ 6. No one

☐ READING TIME

1. <1 minute
2. >1 -<3
3. >3 -<5
4. 5 minutes +

☐ GROUP TYPE

1. Alone
2. With family & friend(s)
3. With friends
4. With immediate family
5. With immediate family & other relatives
6. With organized group

☐ OTHER ACTIVITIES AT SITE

1. Walk pets/self
2. View scenery/photograph
3. Eat/use garbage can
4. Stop & let others pass/ turn around
5. Other ____________________

☐ # GROUPS AT SAME TIME (@ SITE)

Talked to Ranger ______________

Special eq. ____________________

VISITOR CENTER INSIDE/EXHIBITS AREA

DATE ________________

SITE ________________

Sampling Ratio: 1/

☐ WEATHER

1. Sunny
2. Overcast/foggy
3. Inclement

SOCIAL AGE/SEX

	MALE	FEMALE
Under 6		
6-12		
13-17		
18-24		
25-35		
36-50		
51-65		
Over 65		

☐ TOTAL # IN GROUP

☐ VEHICLE/LODGING

1. Self-propelled motor home
2. Hard top trailer
3. Van, pickup camper
4. Collapsible trailer
5. Tent camper
6. Fixed lodging
7. Motorcycle - camping/noncamping
8. Not available

Exhibits read ________________

Amt. time read ________________

Social Interaction ________________

Flow pattern ________________

	#
PETS: Dog(s)	☐
Cat(s)	☐
Other	☐ ____________

NOTES:

☐ TIME

1. Morning
2. Afternoon
3. Evening

☐ 1. Weekend
☐ 2. Weekday

☐ LENGTH OF ACTIVITY

1. Only asked for information
2. <5 minutes
3. >5 -<15
4. >15 -<30
5. >30 -<1 hour
6. 1 hour +

☐ GROUP TYPE

1. Alone
2. With family & friend(s)
3. With friends
4. With immediate family
5. With immediate family & other relatives
6. With organized group

☐ RACE

1. Black
2. Caucasian
3. Oriental
4. American Indian
5. Other ________________

ACTIVITIES AT SITE

☐ 1. Talk to ranger
☐ 2. Read brochure
☐ 3. Purchase Materials
☐ 4. Other __________

☐ EXHIBITS

1. Participant
2. Nonparticipant

Special eq. ________________

VISITOR CENTER STOPPING

DATE ________________

SITE ________________

Sampling Ratio: ☐ 1/

☐ WEATHER

1. Sunny
2. Overcast/foggy
3. Inclement

☐ 1. Participant (stop)
☐ 2. Nonparticipant (no)

SOCIAL AGE/SEX

	MALE	FEMALE
Under 6		
6-12		
13-17		
18-24		
25-35		
36-50		
51-65		
Over 65		

☐ VEHICLE/LODGING

1. Self-propelled motor home
2. Hard top trailer
3. Van, pickup camper
4. Collapsible trailer
5. Tent camper
6. Fixed lodging
7. Motorcycle - camping/noncamping
8. Not available

☐ STATE/COUNTRY

PETS: #
Dog(s) ☐
Cat(s) ☐
Other ☐ ________________

Special eq. ________________

NOTES:

☐ TIME

1. Morning
2. Afternoon
3. Evening

☐ 1. Weekend
☐ 2. Weekday

☐ LENGTH OF ACTIVITY (TOTAL)

1. < 15 minutes
2. > 15 - < 30
3. > 30 - < 1 hour
4. 1 hour +
5. Nonspecific

☐ GROUP TYPE

1. Alone
2. With family & friend(s)
3. With friends
4. With immediate family
5. With immediate family & other relatives
6. With organized group

☐ TOTAL # IN GROUP

☐ RACE

1. Black
2. Caucasian
3. Oriental
4. American Indian
5. Other ________________

OTHER ACTIVITIES AT SITE

☐ 1. Restroom/drink
☐ 2. Trail (SGT)
☐ 3. Enter VC
☐ 4. Other ____________

Talked to Ranger ____________

☐ ACCESS

1. Direct
2. Indirect

EVENING PROGRAMS

DATE ____________________

SITE ____________________

Sampling Ratio: ☐ 1/

☐ WEATHER

1. Sunny
2. Overcast/foggy
3. Inclement

☐ 1. Participant
☐ 2. Nonparticipant

SOCIAL AGE/SEX

	MALE	FEMALE
Under 6		
6-12		
13-17		
18-24		
25-35		
36-50		
51-65		
Over 65		

☐ VEHICLE/LODGING

1. Self-propelled motor home
2. Hard top trailer
3. Van, pickup camper
4. Collapsible trailer
5. Tent camper
6. Fixed lodging
7. Motorcycle - camping/noncamping
8. Not available

☐ STATE/COUNTRY (nonpart.)

Talked to Ranger ________________

Special eq. ____________________

NOTES:

☐ 1. Weekend
☐ 2. Weekday

☐ LENGTH OF ACTIVITY

1. <15 minutes
2. >15 -<30
3. >30 -<1 hour
4. 1 hour +
5. Nonspecific

☐ GROUP TYPE

1. Alone
2. With family & friend(s)
3. With friends
4. With immediate family
5. With immediate family & other relatives
6. With organized group

☐ TOTAL # IN GROUP

☐ RACE

1. Black
2. Caucasian
3. Oriental
4. American Indian
5. Other ____________________

☐ PROGRAM TYPE

1. Campfire
2. Slide/movie
3. Special (music)
4. Other ____________________

		#
PETS:	Dog(s)	☐
	Cat(s)	☐
	Other	☐ ____________

GUIDED ACTIVITIES

DATE ________________

SITE ________________

Sampling Ratio: 1/

☐ WEATHER

1. Sunny
2. Overcast/foggy
3. Inclement

☐ 1. Participant
☐ 2. Nonparticipant

SOCIAL AGE/SEX

	MALE	FEMALE
Under 6		
6-12		
13-17		
18-24		
25-35		
36-50		
51-65		
Over 65		

☐ VEHICLE/LODGING

1. Self-propelled motor home
2. Hard top trailer
3. Van, pickup camper
4. Collapsible trailer
5. Tent camper
6. Fixed lodging
7. Motorcycle - camping/noncamping
8. Not available

☐ STATE/COUNTRY

PETS:	#
Dog(s)	☐
Cat(s)	☐
Other	☐ ____________

NOTES:

ACTIVITY DESCRIPTION ________
____

☐ TIME

1. Morning
2. Afternoon
3. Evening

☐ 1. Weekend
☐ 2. Weekday

☐ LENGTH OF ACTIVITY

1. < 15 minutes
2. > 15 - < 30
3. > 30 - < 1 hour
4. 1 hour +
5. Nonspecific

☐ GROUP TYPE

1. Alone
2. With family & friend(s)
3. With friends
4. With immediate family
5. With immediate family & other relatives
6. With organized group

☐ TOTAL # IN GROUP

☐ RACE

1. Black
2. Caucasian
3. Oriental
4. American Indian
5. Other ________________

Talked to Ranger ____________

Special eq. ______________

DRIVEBYS -- NONPARTICIPANTS

DATE ____________________ TIME ____________________

SITE ____________________ WEATHER ________________

Sampling Ratio: 1/ Activity not part. in ______________

	# IN GROUP	STATE LICENCE	VEHICLE TYPE	ACCESS 1. DIRECT 2. INDIRECT	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

APPENDIX B

TABLES FOR DESCRIPTION OF DATA SET

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TABLE 20

SOCIAL AGGREGATE AND SOCIAL GROUP CHARACTERISTICS OF SELF-GUIDED WALKS ACTIVITY SAMPLE (n=63)

VARIABLE	OBSERVATION CATEGORY	N	%
Social Aggregate			
Social Age*	Under 6	10	5.3
	6-12	15	8.0
	13-17	24	12.9
	18-24	10	5.3
	25-35	48	25.7
	36-50	38	20.3
	51-65	28	15.0
	Over 65	14	7.5
Race	Black	0	0.0
	Caucasian	63	100.0
	Oriental	0	0.0
	American Indian	0	0.0
	Other	0	0.0
	Mixed	0	0.0
Residence	In-state	15	24.2
	Out-of-state	47	75.8
Social Group			
Group Type	Alone	3	4.8
	With Family & Friend(s)	6	9.5
	With Friends	1	1.6
	With Immediate Family	44	69.8
	With Immediate Family & Other Relatives	9	14.3
	With Organized Group	0	0.0
Total Number in Group	1	3	4.8
	2	25	39.7
	3	14	22.2
	4	13	20.6
	5	7	11.1
	6	1	1.6
	7	0	0.0
	8 or more	0	0.0

---

*N contains total number of individuals observed per age group, not total frequency of observations.

TABLE 21

OBSERVATIONS FOR TIME/ENVIRONMENT AND PLACE VARIABLES OF SELF-GUIDED WALKS ACTIVITY (n=63)

VARIABLE	OBSERVATION CATEGORY	N	%
Time/Environment			
Date	June	18	28.6
	July	23	36.5
	August	22	34.9
Weather	Sunny	34	54.0
	Overcast/Foggy	29	46.0
	Inclement	0	0.0
Time of Day	Morning	30	47.6
	Afternoon	33	52.4
Day of Week	Weekend	16	25.4
	Weekday	47	74.6
Place			
Access	Direct	40	63.5
	Indirect	23	36.5

TABLE 22

DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS FOR SELF-GUIDED WALKS ACTIVITY (n=63)

VARIABLE	OBSERVATION CATEGORY	N	%
Vehicle/Lodging	Self-propelled motor home	3	4.8
	Hard top trailer	2	3.2
	Van, pickup camper	8	12.7
	Collapsible trailer	1	1.6
	Tent camper	1	1.6
	Fixed lodging	45	71.4
	Motorcycle	3	4.8
	Not available	0	0.0
Talked to Ranger	Yes	10	15.9
	No	53	84.1
Pets	Dog	1	1.6
	Cat	0	0.0
	Other	0	0.0
	Combination	1	1.6
	None	61	96.8
Special Equipment	No equipment	41	65.1
	Camera, binoculars	15	23.8
	Walking stick	1	1.6
	Bicycles	3	4.8
	Food &/ eating implements	1	1.6
	Ponchos,umbrella,lights	0	0.0
	Books (guide)	0	0.0
	Combination	2	3.2
Amount of time on trail	Less than 15 minutes	4	6.3
	>15 -<30 minutes	1	1.6
	>30 -< 1 hour	10	15.9
	1 hour +	14	22.2
	Did not walk trail	34	54.0
Other Activities	Walk pets/self	0	0.0
	View scenery/photograph	5	7.9
	Eat/use garbage can	3	4.8
	Related to Automobile	9	14.3
	Read sign	25	39.7
	No other activities	6	9.5
	Combination including read sign	12	19.0
	Combination excluding read sign	3	4.8

TABLE 23

SOCIAL AGGREGATE AND SOCIAL GROUP CHARACTERISTICS OF ROADSIDE EXHIBIT ACTIVITY SAMPLE (n=97)

VARIABLE	OBSERVATION CATEGORY	N	%
Social Aggregate			
Social Age*	Under 6	6	2.2
	6-12	26	9.7
	13-17	18	6.7
	18-24	30	11.1
	25-35	54	20.1
	36-50	52	19.3
	51-65	58	21.6
	Over 65	25	9.3
Race	Black	1	1.0
	Caucasian	96	99.0
	Oriental	0	0.0
	American Indian	0	0.0
	Other	0	0.0
	Mixed	0	0.0
Residence	In-state	28	28.9
	Out-of-state	69	71.1
Social Group			
Group Type	Alone	5	5.2
	With Family & Friend(s)	4	4.1
	With Friends	6	6.2
	With Immediate Family	69	71.1
	With Immediate Family & Other Relatives	12	12.4
	With Organized Group	1	1.0
Total Number in Group	1	5	5.2
	2	51	52.6
	3	15	15.5
	4	17	17.5
	5	5	5.2
	6	2	2.1
	7	2	2.1
	8 or more	0	0.0

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*N contains total number of individuals observed per age group, not total frequency of observations.

TABLE 24

OBSERVATIONS FOR TIME/ENVIRONMENT AND PLACE VARIABLES OF ROADSIDE EXHIBIT ACTIVITY (n=97)

VARIABLE	OBSERVATION CATEGORY	N	%
Time/Environment			
Date	June	23	24.0
	July	33	34.4
	August	40	41.7
Weather	Sunny	50	51.5
	Overcast/Foggy	42	43.3
	Inclement	5	5.2
Time of Day	Morning	56	57.7
	Afternoon	41	42.3
Day of Week	Weekday	67	69.1
	Weekend	30	30.9
Place			
Access	Direct	44	45.4
	Indirect	53	54.6
Site	Ridge Junction	6	6.2
	National Forests	1	1.0
	Glassmine Falls	7	7.2
	Looking Glass Rock	22	22.7
	Bear Trap Gap	15	15.5
	American Chestnuts	22	22.7
	French Broad River	24	24.7

TABLE 25

DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS FOR ROADSIDE EXHIBIT ACTIVITY (n=97)

VARIABLE	OBSERVATION CATEGORY	N	%
Vehicle/Lodging	Self-propelled motor home	1	1.0
	Hard top trailer	2	2.1
	Van, pickup camper	19	19.6
	Collapsible trailer	1	1.0
	Tent camper	6	6.2
	Fixed lodging	65	67.0
	Motorcycle	3	3.1
	Not available	0	0.0
Talked to Ranger	Yes	5	5.2
	No	92	94.8
Pets	Dog	2	2.1
	Cat	0	0.0
	Other	0	0.0
	Combination	0	0.0
	None	95	97.9
Special Equipment	No equipment	69	71.1
	Camera, binoculars	27	27.8
	Walking stick	0	0.0
	Bicycles	1	1.0
	Food &/ eating implements	0	0.0
	Ponchos,umbrella,lights	0	0.0
	Books (guide)	0	0.0
	Combination	0	0.0
Exhibit Type	Signboard	54	55.7
	Lift	43	44.3
Length of time at Overlook	< 15 minutes	88	94.6
	> 15 -< 30 minutes	3	3.2
	> 30 -< 1 hour	2	2.2
	1 hour +	0	0.0
	Nonspecific	0	0.0
Who read in Group	Mother/Father	32	33.3
	Other Adult	1	1.0
	Child	1	1.0
	Friend	2	2.1
	Alone	1	1.0
	No one	48	50.0
	Mother/Father and Adult/Child	10	10.4
	Mother/Father, Adult, Child	1	1.0

TABLE 25 (CONTINUED)
DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS . . .

VARIABLE	OBSERVATION CATEGORY	N	%
Who read aloud	Mother/Father	11	12.1
	Adult	1	1.1
	Child	0	0.0
	Friend	1	1.1
	Alone	0	0.0
	No one	78	85.7
	Mother/Father and Adult/Child	0	0.0
	Mother/Father, Adult, Child	0	0.0
Reading Time	< 1 minute	42	43.3
	> 1 -< 3 minutes	7	7.2
	> 3 -< 5 minutes	0	0.0
	5 minutes +	0	0.0
	0 - did not read	48	49.5
Other Activities at Site	Walk pets/self	0	0.0
	View scenery/photograph	43	44.3
	Eat/use garbage can	3	3.1
	Related to Automobile	16	16.5
	Read map/Blue Ridge Parkway book	6	6.2
	Talk with other groups	1	1.0
	Combination excluding map and talk	15	15.5
	No other activities	13	13.4
Number of Groups at Site at same time	1	39	40.2
	2	45	46.4
	3	7	7.2
	4	3	3.1
	5	2	2.1
	6	1	1.0

TABLE 26

SOCIAL AGGREGATE AND SOCIAL GROUP CHARACTERISTICS OF VISITOR CENTER EXHIBIT AREA ACTIVITY SAMPLE (n=106)

VARIABLE	OBSERVATION CATEGORY	N	%
Social Aggregate			
Social Age*	Under 6	17	5.6
	6-12	29	9.5
	13-17	25	8.2
	18-24	24	7.8
	25-35	86	28.1
	36-50	72	23.5
	51-65	43	14.0
	Over 65	10	3.3
Race	Black	3	2.8
	Caucasian	99	93.4
	Oriental	3	2.8
	American Indian	0	0.0
	Other	0	0.0
	Mixed	1	0.9
Social Group			
Group Type	Alone	10	9.4
	With Family & Friend(s)	12	11.3
	With Friends	8	7.5
	With Immediate Family	64	60.4
	With Immediate Family & Other Relatives	11	10.4
	With Organized Group	1	0.9
Total Number in Group	1	10	9.4
	2	40	37.7
	3	26	24.5
	4	22	20.8
	5	5	4.7
	6	1	0.9
	7	0	0.0
	8 or more	2	1.9

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*N contains total number of individuals observed per age group, not total frequency of observations.

TABLE 27

OBSERVATIONS FOR TIME/ENVIRONMENT AND PLACE VARIABLES OF VISITOR CENTER EXHIBIT AREA ACTIVITY (n=106)

VARIABLE	OBSERVATION CATEGORY	N	%
Time/Environment			
Date	June	27	25.5
	July	43	40.5
	August	36	34.0
Weather	Sunny	29	27.4
	Overcast/Foggy	58	54.7
	Inclement	19	17.9
Time of Day	Morning	40	37.7
	Afternoon	66	62.3
Day of Week	Weekend	67	63.2
	Weekday	39	36.8

TABLE 28

DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS FOR VISITOR CENTER EXHIBIT AREA ACTIVITY (n=106)

VARIABLE	OBSERVATION CATEGORY	N	%
Vehicle/Lodging	Self-propelled motor home	0	0.0
	Hard top trailer	0	0.0
	Van, pickup camper	1	0.9
	Collapsible trailer	0	0.0
	Tent camper	0	0.0
	Fixed lodging	1	0.9
	Motorcycle	4	3.8
	Not available	100	94.3
Pets	Dog	2	1.9
	Cat	0	0.0
	Other	0	0.0
	Combination	0	0.0
	None	104	98.1
Special Equipment	No equipment	78	73.6
	Camera, binoculars	22	20.8
	Walking stick	1	0.9
	Bicycles	1	0.9
	Food &/ eating implements	1	0.9
	Ponchos,umbrella,lights	0	0.0
	Books (guide)	1	0.9
	Combination	2	1.9
Number of Exhibits Read	0	12	11.3
	1	2	1.9
	2	13	12.3
	3	14	13.2
	4	18	17.0
	5	18	17.0
	6	12	11.3
	7	9	8.5
	8 or more	8	7.5
Exhibit Reading Time	< 1 minute	7	6.7
	> 1 - < 3 minutes	40	38.1
	> 3 - < 5 minutes	28	26.7
	> 5 - < 10 minutes	15	14.3
	> 10 - < 15 minutes	2	1.9
	> 15 minutes	1	1.0
	0 - no reading	12	11.4

TABLE 28 (CONTINUED)
DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS . . .

VARIABLE	OBSERVATION CATEGORY	N	%
Social Interaction	With other visitors	11	10.4
	With each other	62	58.5
	None	33	31.1
Flow Pattern	Right to Left	32	30.8
	Left to Right	46	44.2
	No consistency	26	25.0
Length of Activity	Only asked for information	8	7.5
	< 5 minutes	47	44.3
	> 5 - < 15 minutes	48	45.3
	> 15 - < 30 minutes	2	1.9
	> 30 - < 1 hour	1	0.9
	1 hour +	0	0.0
Other Activities at Site	Talk to Ranger	26	24.5
	Read brochure	3	2.8
	Purchase materials	2	1.9
	Other (gaze outside, look at materials)	23	21.7
	Talk &/ Read &/ Purchase	30	28.3
	Talk, Read, & Purchase	12	11.3
	No other activities	10	9.4

TABLE 29

SOCIAL AGGREGATE AND SOCIAL GROUP CHARACTERISTICS OF VISITOR CENTER STOPPING ACTIVITY SAMPLE (n=81)

VARIABLES	OBSERVATION CATEGORY	N	%
Social Aggregate			
Social Age*	Under 6	4	1.6
	6-12	14	5.5
	13-17	18	7.0
	18-24	8	3.1
	25-35	42	16.5
	36-50	65	25.5
	51-65	54	21.2
	Over 65	50	19.6
Race	Black	1	1.2
	Caucasian	80	98.8
	Oriental	0	0.0
	American Indian	0	0.0
	Other	0	0.0
	Mixed	0	0.0
Residence	In-state	35	43.2
	Out-of-state	46	56.8
Social Group			
Group Type	Alone	11	13.6
	With Family & Friend(s)	5	6.2
	With Friends	7	8.6
	With Immediate Family	50	61.7
	With Immediate Family & Other Relatives	7	8.6
	With Organized Group	1	1.2
Total Number in Group	1	11	13.6
	2	37	45.7
	3	14	17.3
	4	13	16.0
	5	4	4.9
	6	1	1.2
	7	0	0.0
	8 or more	1	1.2

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*N contains total number of individuals observed per age group, not total frequency of observations.

TABLE 30

OBSERVATIONS FOR TIME/ENVIRONMENT AND PLACE VARIABLES OF VISITOR CENTER STOPPING ACTIVITY (n=81)

VARIABLE	OBSERVATION CATEGORY	N	%
Time/Environment			
Date	June	17	21.0
	July	33	40.7
	August	31	38.3
Weather	Sunny	28	34.6
	Overcast/Foggy	34	42.0
	Inclement	19	23.5
Time of Day	Morning	38	46.9
	Afternoon	43	53.1
Day of Week	Weekday	45	55.6
	Weekend	36	44.4
Place			
Access	Direct	34	43.0
	Indirect	45	57.0

TABLE 31

DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS FOR VISITOR CENTER STOPPING ACTIVITY (n=81)

VARIABLE	OBSERVATION CATEGORY	N	%
Vehicle/Lodging	Self-propelled motor home	0	0.0
	Hard top trailer	0	0.0
	Van, pickup camper	7	8.6
	Collapsible trailer	0	0.0
	Tent camper	3	3.7
	Fixed lodging	63	77.8
	Motorcycle	6	7.4
	Not available	2	2.5
Talked to Ranger	Yes	25	30.9
	No	56	69.1
Pets	Dog	0	0.0
	Cat	0	0.0
	Other	0	0.0
	Combination	0	0.0
	None	81	100.0
Special Equipment	No equipment	67	82.7
	Camera, binoculars	12	14.8
	Walking stick	1	1.2
	Bicycles	0	0.0
	Food &/ eating implements	1	1.2
	Ponchos,umbrella,lights	0	0.0
	Books (guide)	0	0.0
	Combination	0	0.0
Length of Activity	< 15 minutes	42	52.5
	> 15 - < 30 minutes	10	12.5
	> 30 - < 1 hour	4	5.0
	1 hour +	3	3.7
	Nonspecific	21	26.2
Other Activities at Site	Use restroom	1	1.2
	Walk trail	0	0.0
	Enter visitor center	9	11.1
	Photograph	2	2.5
	Use restroom, enter VC, &/ photograph	25	30.9
	Enter VC & Walk trail/ photograph	3	3.7
	Use restroom, walk trail & enter VC	3	3.7
	No other activities	38	46.9

TABLE 32

SOCIAL AGGREGATE AND SOCIAL GROUP CHARACTERISTICS OF EVENING PROGRAM ACTIVITY SAMPLE (n=101)

VARIABLES	OBSERVATION CATEGORY	N	%
Social Aggregate			
Social Age*	Under 6	8	2.8
	6-12	28	9.7
	13-17	30	10.4
	18-24	20	6.9
	25-35	47	16.3
	36-50	65	22.6
	51-65	47	16.3
	Over 65	43	15.0
Race	Black	0	0.0
	Caucasian	101	100.0
	Oriental	0	0.0
	American Indian	0	0.0
	Other	0	0.0
	Mixed	0	0.0
Residence	In-state	14	24.1
	Out-of-state	44	75.9
Social Group			
Group Type	Alone	5	5.0
	With Family & Friend(s)	12	11.9
	With Friends	8	7.9
	With Immediate Family	70	69.3
	With Immediate Family & Other Relatives	6	5.9
	With Organized Group	0	0.0
Total Number in Group	1	7	6.9
	2	55	54.5
	3	10	9.9
	4	15	14.9
	5	6	5.9
	6	4	4.0
	7	2	2.0
	8 or more	2	2.0

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*N contains total number of individuals observed per age group, not total frequency of observations.

TABLE 33

OBSERVATIONS FOR TIME/ENVIRONMENT AND PLACE VARIABLES OF EVENING PROGRAM ACTIVITY (n=101)

VARIABLE	OBSERVATION CATEGORY	N	%
Time/Environment			
Date	June	18	17.8
	July	45	44.6
	August	38	37.6
Weather	Sunny	41	40.6
	Overcast/Foggy	49	48.5
	Inclement	11	10.9
Day of Week	Weekend	57	56.4
	Weekday	44	43.6
Place			
Site	Mt. Pisgah Campground	36	35.6
	Old Pisgah Inn	65	64.4

TABLE 34

DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS FOR EVENING PROGRAM ACTIVITY (n=101)

VARIABLE	OBSERVATION CATEGORY	N	%
Vehicle/Lodging	Self-propelled motor home	4	4.0
	Hard top trailer	10	9.9
	Van, pickup camper	15	14.9
	Collapsible trailer	7	6.9
	Tent camper	14	13.9
	Fixed lodging	3	3.0
	Motorcycle	2	2.0
	Not available	46	45.5
Talked to Ranger	Yes	16	15.9
	No	85	84.1
Pets	Dog	9	8.9
	Cat	1	1.0
	Other	0	0.0
	Combination	0	0.0
	None	91	90.1
Special Equipment	No equipment	84	83.2
	Camera, binoculars	1	1.0
	Walking stick	2	2.0
	Bicycles	2	2.0
	Food &/ eating implements	1	1.0
	Ponchos,umbrella,lights	11	10.9
	Books (guide)	0	0.0
	Combination	0	0.0
Length of Activity	<15 minutes	0	0.0
	>15 - <30 minutes	4	4.0
	>30 - <1 hour	57	56.4
	1 hour +	29	28.7
	Nonspecific	11	10.9
Program Type	Campfire	45	44.6
	Slide/Movie	46	45.5
	Music/Special	10	9.9
	Other	0	0.0

TABLE 35

SOCIAL AGGREGATE AND SOCIAL GROUP CHARACTERISTICS OF GUIDED ACTIVITY SAMPLE (n=99)

VARIABLE	OBSERVATION CATEGORY	N	%
Social Aggregate			
Social Age*	Under 6	11	4.0
	6-12	41	15.1
	13-17	31	11.4
	18-24	9	3.3
	25-35	44	16.2
	36-50	64	23.5
	51-65	48	17.7
	Over 65	24	8.8
Race	Black	0	0.0
	Caucasian	99	100.0
	Oriental	0	0.0
	American Indian	0	0.0
	Other	0	0.0
	Mixed	0	0.0
Residence	In-state	7	8.0
	Out-of-state	80	92.0
Social Group			
Group Type	Alone	18	18.2
	With Family & Friend(s)	9	9.1
	With Friends	5	5.1
	With Immediate Family	61	61.6
	With Immediate Family & Other Relatives	5	5.1
	With Organized Group	1	1.0
Total Number in Group	1	18	18.2
	2	43	43.4
	3	15	15.2
	4	13	13.1
	5	4	4.0
	6	2	2.0
	7	2	2.0
	8 or more	2	2.0

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*N contains total number of individuals observed per age group, not total frequency of observations.

TABLE 36

OBSERVATIONS FOR TIME/ENVIRONMENT AND PLACE VARIABLES OF GUIDED ACTIVITY (n=99)

VARIABLE	OBSERVATION CATEGORY	N	%
Time/Environment			
Date	June	10	10.1
	July	37	37.4
	August	52	52.4
Weather	Sunny	45	45.5
	Overcast/Foggy	47	47.5
	Inclement	7	7.1
Time of Day	Morning	8	8.1
	Afternoon	91	91.9
	Evening	0	0.0
Day of Week	Weekend	16	16.2
	Weekday	83	83.8

TABLE 37

DISTRIBUTION OF ASSOCIATED ACTIVITY CHARACTERISTICS FOR GUIDED ACTIVITY (n=99)

VARIABLE	OBSERVATION CATEGORY	N	%
Vehicle/Lodging	Self-propelled motor home	8	8.1
	Hard top trailer	22	22.2
	Van, pickup camper	9	9.1
	Collapsible trailer	8	8.1
	Tent camper	15	15.2
	Fixed lodging	8	8.1
	Motorcycle	0	0.0
	Not available	29	29.3
Talked to Ranger	Yes	60	60.6
	No	39	39.4
Pets	Dog	8	8.1
	Cat	0	0.0
	Other	0	0.0
	Combination	0	0.0
	None	91	91.9
Special Equipment	No equipment	75	75.8
	Camera, binoculars	13	13.1
	Walking stick	1	1.0
	Bicycles	5	5.1
	Food &/ eating implements	0	0.0
	Ponchos,umbrella,lights	3	3.0
	Books (guide)	1	1.0
	Combination	1	1.0
Activity Type	No Utensils Please	16	16.2
	Leaf Prints	32	32.3
	Buck Springs	10	10.1
	New Games	2	2.0
	Nature Walk	9	9.1
	Toe Cooler	12	12.1
	Grok a Tree	9	9.1
	Backpack Idea Swap	9	9.1
Length of Activity	<15 minutes	0	0.0
	>15 - <30 minutes	15	15.2
	>30 - <1 hour	60	60.6
	1 hour +	24	24.2
	Nonspecific	0	0.0

APPENDIX C

TABLES FOR TEST OF NULL HYPOTHESIS 3

TABLE 38

TEST OF NULL HYPOTHESIS 3A: PARTICIPANTS AND NONPARTICIPANTS ARE INDEPENDENT OF OBSERVED STUDY VARIABLES FOR SELF-GUIDED WALKS

SOCIAL AGGREGATE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Social Age		
Under 6	9	1
6-12	10	5
13-17	10	14
18-24	7	3
25-35	25	23
36-50	18	20
51-65	10	18
Over 65	1	13

X^2 = 22.89 with 7 degrees of freedom Rejected

Residence		
In-state	4	11
Out-of-state	24	23

X^2 = 1.84 with 1 degree of freedom Not rejected

SOCIAL GROUP VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Group Type		
Alone	0	3
With Family & Friend(s)	2	4
With Friends	1	0
With Immediate Family	22	22
With Immediate Family & Relatives	4	5

X^2 = 4.41 with 4 degrees of freedom Not rejected

Total Number in Group		
1	0	3
2	12	13
3	7	7
4	4	9
5	6	1
6	0	1

X^2 = 9.53 with 5 degrees of freedom Not rejected

TABLE 38 (CONTINUED)
TEST OF NULL HYPOTHESIS 3A . . .

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Weather		
Sunny	17	17
Overcast/Foggy	12	17

X^2 = .18 with 1 degree of freedom   Not rejected

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Time of Day		
Morning	14	16
Afternoon	15	18

X^2 = .01 with 1 degree of freedom   Not rejected

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Day of Week		
Weekend	9	7
Weekday	20	27

X^2 = .43 with 1 degree of freedom   Not rejected

PLACE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Access		
Direct	19	21
Indirect	10	13

X^2 = .002 with 1 degree of freedom   Not rejected

ACTIVITY VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Vehicle/Lodging		
Self-propelled motor home	2	1
Hard-top trailer	1	1
Van, pickup camper	5	3
Collapsible trailer	0	1
Tent camper	1	0
Fixed lodging	19	26
Motorcycle	1	2

X^2 = 3.88 with 6 degrees of freedom   Not rejected

ACTIVITY VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Talked to Ranger		
Yes	9	1
No	20	33

X^2 = 7.27 with 1 degree of freedom   Rejected

TABLE 38 (CONTINUED)
TEST OF NULL HYPOTHESIS 3A . . .

ACTIVITY VARIABLE (CONT.)	PARTICIPANTS	NONPARTICIPANTS
Pets		
Dog	1	0
Combination	0	1
None	28	33
$X^2 = 2.03$ with 2 degrees of freedom		Not rejected
Special Equipment		
No equipment	14	27
Camera, binoculars, etc.	15	7
$X^2 = 6.76$ with 1 degree of freedom		Rejected
Amount of Time on Trail		
Less than 15 minutes	4	0
>15 -<30 minutes	1	0
>30 -<1 hour	10	0
1 hour +	14	0
Did not walk trail	0	34
$X^2 = 62.99$ with 4 degrees of freedom		Rejected but violated X^2
Other Activities at Site		
View scenery/photograph	0	5
Eat/use garbage can	1	2
Automobile characteristics	0	9
Read sign	12	13
No other activities	6	0
Combination including read sign	10	2
Combination excluding read sign	0	3
$X^2 = 28.49$ with 6 degrees of freedom		Rejected but violated X^2

TABLE 39

TEST OF NULL HYPOTHESIS 3B: PARTICIPANTS AND NONPARTICIPANTS ARE INDEPENDENT OF OBSERVED STUDY VARIABLES FOR ROADSIDE EXHIBITS

SOCIAL AGGREGATE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Social Age		
Under 6	4	2
6-12	10	16
13-17	5	13
18-24	15	15
25-35	28	26
36-50	25	27
51-65	28	30
Over 65	15	10
X^2 = 6.50 with 7 degrees of freedom		Not rejected
Race		
Black	1	0
Caucasian	47	48
X^2 = 1.01 with 1 degree of freedom		Not rejected
Residence		
In-state	10	18
Out-of-state	38	30
X^2 = 2.47 with 1 degree of freedom		Not rejected

SOCIAL GROUP VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Group Type		
Alone	1	4
With Family & Friend(s)	3	1
With Friends	3	3
With Immediate Family	34	34
With Immediate Family & Relatives	6	6
With Organized Group	1	0
X^2 = 3.80 with 5 degrees of freedom		Not rejected
Total Number in Group		
1-2	30	26
3-4	14	17
5-8 or more	4	5
X^2 = .70 with 2 degrees of freedom		Not rejected

TABLE 39 (CONTINUED)
TEST OF NULL HYPOTHESIS 3B . . .

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Weather		
Sunny	22	28
Overcast/Foggy	24	17
Inclement	2	3
X^2 = 2.12 with 2 degrees of freedom		Not rejected
Time of Day		
Morning	28	28
Afternoon	20	20
X^2 = .00 with 1 degree of freedom		Not rejected
Day of Week		
Weekend	13	17
Weekday	35	31
X^2 = .44 with 1 degree of freedom		Not rejected

PLACE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Access		
Direct	24	20
Indirect	24	28
X^2 = .37 with 1 degree of freedom		Not rejected
Site		
No panoramic view	8	7
Panoramic view	40	41
X^2 = .07 with 1 degree of freedom		Not Rejected

ACTIVITY VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Vehicle/Lodging		
Self-propelled motor home	0	1
Hard top trailer	2	0
Van, pickup camper	9	10
Collapsible trailer	0	1
Tent camper	5	1
Fixed lodging	30	34
Motorcycle	2	1
X^2 = 7.30 with 6 degrees of freedom		Not rejected

TABLE 39 (CONTINUED)
TEST OF NULL HYPOTHESIS 3B . . .

ACTIVITY VARIABLE (CONT.)	PARTICIPANTS	NONPARTICIPANTS
Talked to Ranger		
Yes	5	0
No	43	48
X^2 = 3.37 with 1 degree of freedom		Not rejected
Pets		
Dog	1	1
None	47	47
X^2 = .00 with 1 degree of freedom		Not rejected
Special Equipment		
No equipment	31	37
Camera, binoculars, etc.	17	11
X^2 = 1.80 with 1 degree of freedom		Not rejected
Exhibit Type		
Signboard	26	27
Lift	22	21
X^2 = .04 with 1 degree of freedom		Not rejected
Length of Time at Overlook		
<15 minutes	42	45
>15 - <30 minutes	3	0
>30 - <1 hour	0	2
X^2 = 5.06 with 2 degrees of freedom		Not rejected
Who Read Aloud		
Mother/Father	11	0
Adult	1	0
Friend	1	0
No one	30	48
X^2 = 16.93 with 3 degrees of freedom		Rejected but violated X^2
Reading Time		
<1 minute	42	0
>1 - <3 minute	6	0
0 - did not read	0	48
X^2 = 96.00 with 2 degrees of freedom		Rejected but violated X^2

TABLE 39 (CONTINUED)
TEST OF NULL HYPOTHESIS 3B . . .

ACTIVITY VARIABLE (CONT.)	PARTICIPANTS	NONPARTICIPANTS
Other Activities at Site		
View scenery/photograph	20	23
Eat/use garbage can	1	2
Automobile characteristics	0	16
Read map/Blue Ridge Parkway book	4	2
Talk with other groups	1	0
Combination excluding map and talk	9	5
No other activities	13	0
X^2 = 32.35 with 6 degrees of freedom		Rejected but violated X^2
Number of Groups at Site at Same Time		
1	22	17
2	17	27
3	6	1
4	1	2
5	1	1
6	1	0
X^2 = 7.82 with 5 degrees of freedom		Not Rejected

TABLE 40

TEST OF NULL HYPOTHESIS 3C: PARTICIPANTS AND NONPARTICIPANTS ARE INDEPENDENT OF OBSERVED STUDY VARIABLES FOR VISITOR CENTER EXHIBITS

SOCIAL AGGREGATE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Social Age		
Under 6	14	3
6-12	26	3
13-17	25	0
18-24	20	4
25-35	78	8
36-50	70	2
51-65	40	3
Over 65	9	1
X^2 = 8.56 with 7 degrees of freedom		Not rejected
Race		
Black	3	0
Caucasian	88	11
Oriental	3	0
Mixed	0	1
X^2 = 8.6 with 3 degrees of freedom		Rejected but violated X^2
SOCIAL GROUP VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Group Type		
Alone	6	4
With Family & Friend(s)	12	0
With Friends	5	3
With Immediate Family	60	4
With Immediate Family & Relatives	10	1
With Organized Group	1	0
X^2 = 17.01 with 5 degrees of freedom		Rejected but violated X^2
Total Number in Group		
1-2	40	10
3-4	46	2
5-8 or more	8	0
X^2 = 7.31 with 2 degrees of freedom		Rejected but violated X^2
TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICITANTS
Weather		
Sunny	25	4
Overcast/Foggy	52	6
Inclement	17	2
X^2 = .24 with 2 degrees of freedom		Not rejected

TABLE 40 (CONTINUED)
TEST OF NULL HYPOTHESIS 3C . . .

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Time of Day		
Morning	37	3
Afternoon	57	9
X^2 = .42 with 1 degree of freedom		Not rejected
Day of Week		
Weekend	60	7
Weekday	34	5
X^2 = .003 with 1 degree of freedom		Not rejected

ACTIVITY VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Vehicle/Lodging		
Van, pickup camper	1	0
Fixed lodging	1	0
Motorcycle	2	2
Not available	90	10
X^2 = 6.39 with 3 degrees of freedom		Not rejected
Pets		
Dog	2	0
None	92	12
X^2 = .27 with 1 degree of freedom		Not rejected
Special Equipment		
No equipment	67	11
Camera, binoculars, etc.	27	1
X^2 = 2.32 with 1 degree of freedom		Not rejected
Social Interaction		
With other visitors	8	3
With each other	61	1
None	25	8
X^2 = 14.09 with 2 degrees of freedom		Rejected but violated X^2

TABLE 40 (CONTINUED)
TEST OF NULL HYPOTHESIS 3C . . .

ACTIVITY VARIABLE (CONT.)	PARTICIPANTS	NONPARTICIPANTS
Number of Exhibits Read		
0	0	12
1	2	0
2	13	0
3	14	0
4	18	0
5	18	0
6	12	0
7	9	0
8 or more	8	0
X^2 = 105.99 with 8 degrees of freedom		Rejected but violated X^2
Exhibit Reading Time		
<1 minute	7	0
>1 -<3 minutes	40	0
>3 -<5 minutes	28	0
>5 -<10 minutes	15	0
>10 -<15 minutes	2	0
>15 minutes	1	0
0 - no reading	0	12
X^2 = 104.99 with 6 degrees of freedom		Rejected but violated X^2
Flow Pattern		
Right to Left	30	2
Left to Right	45	1
No consistency	17	9
X^2 = 18.39 with 2 degrees of freedom		Rejected but violated X^2
Length of Activity		
Only asked for information	1	7
<5 minutes	42	5
>5 -<15 minutes	48	0
>15 -<30 minutes	2	0
>30 -<1 hour	1	0
X^2 = 52.77 with 4 degrees of freedom		Rejected but violated X^2
Other Activities at Site		
Talk to Ranger	22	4
Read brochure	3	0
Purchase materials	1	1
Other	23	0
Talk &/ Read &/ Purchase	24	6
Talk, Read, & Purchase	12	0
No other activities	9	1
X^2 = 10.52 with 6 degrees of freedom		Not rejected

TABLE 41

TEST OF NULL HYPOTHESIS 3D: PARTICIPANTS AND NONPARTICIPANTS ARE INDEPENDENT OF OBSERVED STUDY VARIABLES FOR VISITOR CENTER STOPPING

SOCIAL AGGREGATE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Social Age		
Under 6	4	0
6-12	6	8
13-17	7	11
18-24	4	4
25-35	20	22
36-50	26	39
51-65	48	6
Over 65	48	2
X^2 = 65.10 with 7 degrees of freedom		Rejected but violated X^2
Race		
Black	0	1
Caucasian	44	36
X^2 = .007 with 1 degree of freedom		Not rejected
Residence		
In-state	18	17
Out-of-state	26	20
X^2 = .05 with 1 degree of freedom		Not rejected
SOCIAL GROUP VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Group Type		
Alone	6	5
With Family & Friend(s)	5	0
With Friends	4	3
With Immediate Family	23	27
With Immediate Family & Other Relatives	5	2
With Organized Group	1	0
X^2 = 7.29 with 5 degrees of freedom		Not rejected
Total Number in Group		
1-2	24	24
3-4	16	11
5-8 or more	4	2
X^2 = 1.05 with 2 degrees of freedom		Not rejected

TABLE 41 (CONTINUED)
TEST OF NULL HYPOTHESIS 3D . . .

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Weather		
Sunny	16	12
Overcast/Foggy	18	16
Inclement	10	9
X^2 = .13 with 2 degrees of freedom		Not rejected
Time of Day		
Morning	25	13
Afternoon	19	24
X^2 = 2.97 with 1 degree of freedom		Not rejected
Day of Week		
Weekend	20	16
Weekday	24	21
X^2 = .04 with 1 degree of freedom		Not rejected

PLACE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Access		
Direct	12	22
Indirect	31	14
X^2 = 7.51 with 1 degree of freedom		Rejected

ACTIVITY VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Vehicle/Lodging		
Van, pickup camper	4	3
Tent camper	2	1
Fixed lodging	34	29
Motorcycle	3	3
Not available	1	1
X^2 = .27 with 4 degrees of freedom		Not rejected
Talked to Ranger		
Yes	25	0
No	19	37
X^2 = 27.80 with 1 degree of freedom		Rejected

TABLE 41 (CONTINUED)
TEST OF NULL HYPOTHESIS 3D . . .

ACTIVITY VARIABLE (CONT.)	PARTICIPANTS	NONPARTICIPANTS
Special Equipment		
No equipment	30	37
Camera, binoculars, etc.	14	0
$X^2 = 14.16$ with 1 degree of freedom		Rejected
Length of Activity		
<15 minutes	25	0
>15 - <30 minutes	10	0
>30 - <1 hour	4	0
1 hour +	3	0
Nonspecific	1	37
$X^2 = 79.54$ with 4 degrees of freedom		Rejected but violated X^2
Other Activities at Site		
Use restroom	1	0
Enter visitor center	9	0
Photograph	2	0
Use restroom, enter VC, &/ photograph	25	0
Enter VC & walk trail/ photograph	3	0
Use restroom, walk trail, & enter VC	3	0
No other activities	1	37
$X^2 = 77.07$ with 6 degrees of freedom		Rejected but violated X^2

TABLE 42

TEST OF NULL HYPOTHESIS 3E: PARTICIPANTS AND NONPARTICIPANTS ARE INDEPENDENT OF OBSERVED STUDY VARIABLES FOR EVENING PROGRAMS

SOCIAL AGGREGATE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Social Age		
Under 6	6	2
6-12	17	11
13-17	12	18
18-24	6	14
25-35	26	21
36-50	31	34
51-65	27	20
Over 65	20	23
X^2 = 9.63 with 7 degrees of freedom		Not rejected
Residence		
In-state	1	12
Out-of-state	7	38
X^2 = .07 with 1 degree of freedom		Not rejected

SOCIAL GROUP VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Group Type		
Alone	2	3
With Family & Friend(s)	9	3
With Friends	3	5
With Immediate Family	33	37
With Immediate Family & Other Relatives	1	5
X^2 = 6.36 with 4 degrees of freedom		Not rejected
Total Number in Group		
1-2	28	34
3-4	14	11
5-8 or more	6	8
X^2 = 1.00 with 2 degrees of freedom		Not rejected

TABLE 42 (CONTINUED)
TEST OF NULL HYPOTHESIS 3E . . .

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Weather		
Sunny	20	21
Overcast/Foggy	28	21
Inclement	0	11
X^2 = 11.81 with 2 degrees of freedom		Rejected
Day of Week		
Weekend	28	29
Weekday	20	24
X^2 = .03 with 1 degree of freedom		Not rejected

PLACE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Site		
Mt. Pisgah Campground	22	14
Old Pisgah Inn	26	39
X^2 = 3.34 with 1 degree of freedom		Not rejected

ACTIVITY VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Vehicle/Lodging		
Self-propelled motor home	0	4
Hard top trailer	0	10
Van, pickup camper	0	15
Collapsible trailer	0	7
Tent camper	1	13
Fixed lodging	3	0
Motorcycle	0	2
Not available	44	2
X^2 = 89.61 with 7 degrees of freedom		Rejected but violated X^2
Talked to Ranger		
Yes	12	3
No	36	50
X^2 = 5.99 with 1 degree of freedom		Rejected
Pets		
Dog/Cat	2	8
None	46	45
X^2 = 2.26 with 1 degree of freedom		Not rejected

TABLE 42 (CONTINUED)
TEST OF NULL HYPOTHESIS 3E . . .

ACTIVITY VARIABLE (CONT.)	PARTICIPANTS	NONPARTICIPANTS
Special Equipment		
No equipment	34	50
Camera, binoculars, etc.	14	3
$X^2 = 9.86$ with 1 degree of freedom		Rejected
Length of Activity		
$>$15 -$<$30 minutes	4	0
$>$30 -$<$1 hour	29	28
1 hour +	9	20
Nonspecific	6	5
$X^2 = 8.05$ with 3 degrees of freedom		Rejected but violated X^2
Program Type		
Campfire	26	19
Slide/Movie	17	29
Music/Special	5	5
$X^2 = 3.98$ with 2 degrees of freedom		Not rejected

TABLE 43

TEST OF NULL HYPOTHESIS 3F: PARTICIPANTS AND NONPARTICIPANTS ARE INDEPENDENT OF OBSERVED STUDY VARIABLES FOR GUIDED ACTIVITIES

SOCIAL AGGREGATE VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Social Age		
Under 6	9	2
6-12	30	11
13-17	20	11
18-24	6	3
25-35	30	14
36-50	42	22
51-65	32	16
Over 65	9	15
X^2 = 10.86 with 7 degrees of freedom		Not rejected
Residence		
In-state	4	3
Out-of-state	50	30
X^2 = 3.07 with 1 degree of freedom		Not rejected

SOCIAL GROUP VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Group Type		
Alone	14	4
With Family & Friend(s)	7	2
With Friends	1	4
With Immediate Family	36	25
With Immediate Family & Other Relatives	5	0
With Organized Group	1	0
X^2 = 10.52 with 5 degrees of freedom		Not rejected
Total Number in Group		
1-2	40	21
3-4	16	12
5-8 or more	8	2
X^2 = 1.74 with 2 degrees of freedom		Not rejected

TABLE 43 (CONTINUED)
TEST OF NULL HYPOTHESIS 3F . . .

TIME/ENVIRONMENT VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Weather		
Sunny	33	12
Overcast/Foggy	24	23
Inclement	7	0
X^2 = 9.10 with 2 degrees of freedom		Rejected but violated X^2
Time of Day		
Morning	8	0
Afternoon	56	35
X^2 = 3.23 with 1 degree of freedom		Not rejected
Day of Week		
Weekend	10	6
Weekday	54	29
X^2 = .04 with 1 degree of freedom		Not rejected
ACTIVITY VARIABLE	PARTICIPANTS	NONPARTICIPANTS
Vehicle/Lodging		
Self-propelled motor home	4	4
Hard top trailer	13	9
Van, pickup camper	1	8
Collapsible trailer	4	4
Tent camper	7	8
Fixed lodging	8	0
Not available	27	2
X^2 = 29.86 with 6 degrees of freedom		Rejected but violated X^2
Talked to Ranger		
Yes	58	2
No	6	33
X^2 = 64.81 with 1 degree of freedom		Rejected
Pets		
Dog	4	4
None	60	31
X^2 = .27 with 1 degree of freedom		Not rejected
Special Equipment		
No equipment	45	30
Camera, binoculars, etc.	19	5
X^2 = 2.94 with 1 degree of freedom		Not rejected

TABLE 43 (CONTINUED)
TEST OF NULL HYPOTHESIS 3F . . . .

ACTIVITY VARIABLE (CONT.)	PARTICIPANTS	NONPARTICIPANTS
Activity Type		
No Utincels Please	16	0
Leaf Prints	10	22
Buck Springs	10	0
New Games	2	0
Nature Walk	9	0
Toe Cooler	6	6
Grok a Tree	9	0
Backpack Idea Swap	2	7
$X^2 = 48.98$ with 7 degrees of freedom		Rejected but violated X^2
Length of Activity		
$>15 - <30$ minutes	15	0
$>30 - <1$ hour	38	22
1 hour +	11	13
$X^2 = 11.96$ with 2 degrees of freedom		Rejected

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ACADEMIC HISTORY

High School	Graduated June 1976 Unioto High School Chillicothe, Ohio
The Ohio State University	Graduated June 1980 B. S. Major -- Environmental Interpretation M. S. June 1980 Environmental Interpretation

HONORS AND PROFESSIONAL ACHIEVEMENTS

High School	Valedictorian June 1976 National Honor Society Scholarship, 1976
The Ohio State Univeristy	Gamma Sigma Delta, 1980 Top Senior Scholar November 1979 Honors Program, School of Natural Resources Phi Kappa Phi, 1979 Golden Key National Honor Society, 1979 Bowman-Cowen Scholarship, 1978

PROFESSIONAL EXPERIENCE

The Ohio State University (Student Instructional Aid, 1980)

Educational Resources Information Center, Columbus, Ohio (Student Research Assistant, 1979-1980)

Blue Ridge Parkway, Asheville, North Carolina (Seasonal Interpreter, 1978 and 1979)

Camp Davella, Seal of Ohio Girl Scout Council, Chillicothe, Ohio (camp counselor, summers: 1973 through 1976)